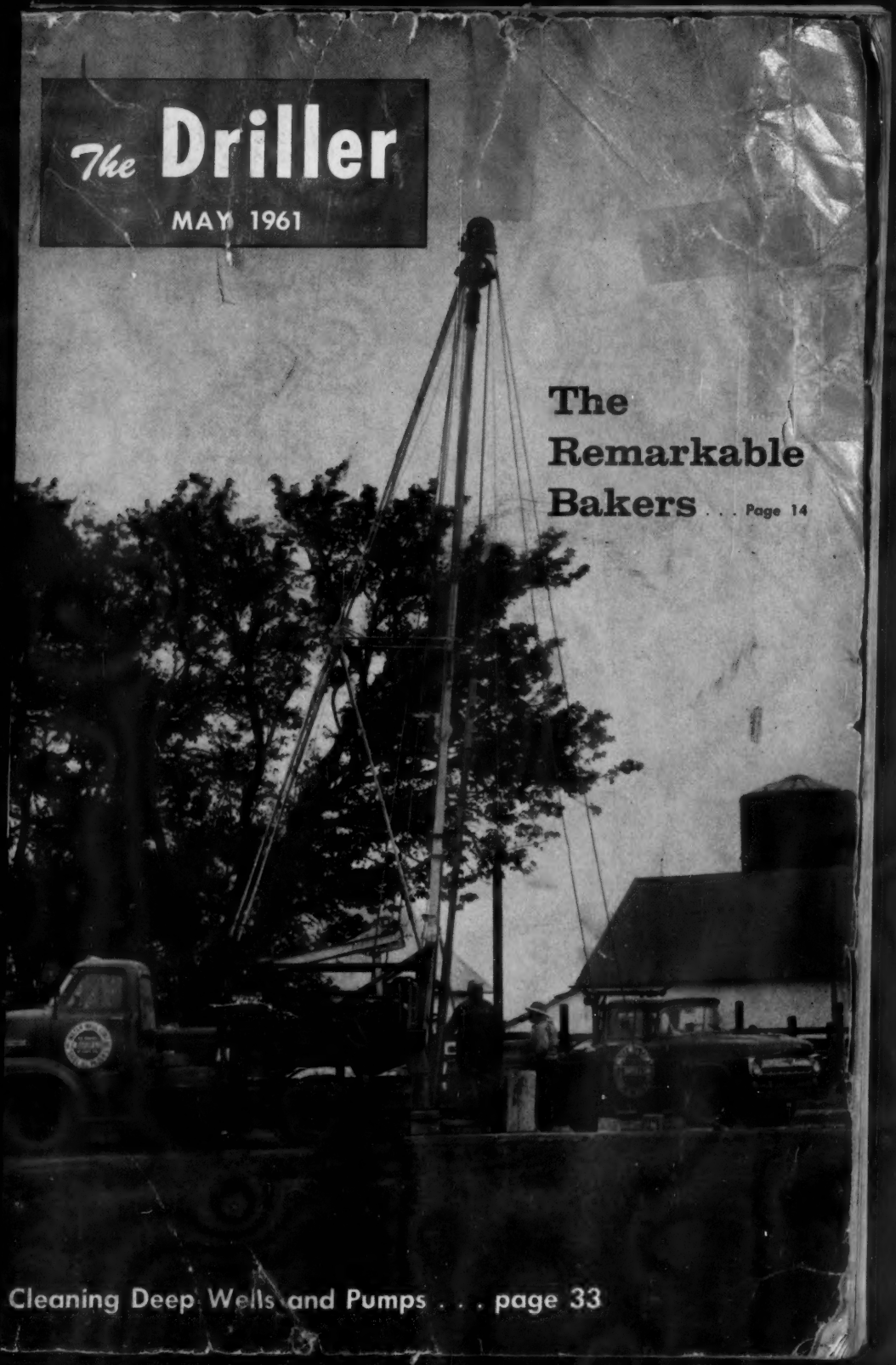
The Driller

MAY 1961



The Remarkable Bakers

. . . Page 14

Cleaning Deep Wells and Pumps . . . page 33

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In Cable Drilling, deep or shallow, a lot depends on the durability of the jars. Acme Alloy Steel Jars are made from a premium grade, high alloy, electric furnace steel, known as chrome-nickel-moly steel. Its deep hardening qualities resist abrasion and its high tensile strength withstands the shock of constant jarring in all Spudder Drilling. Drillers tell us that, compared with other makes they have used, Acme Jars have much longer life without fatigue failure.

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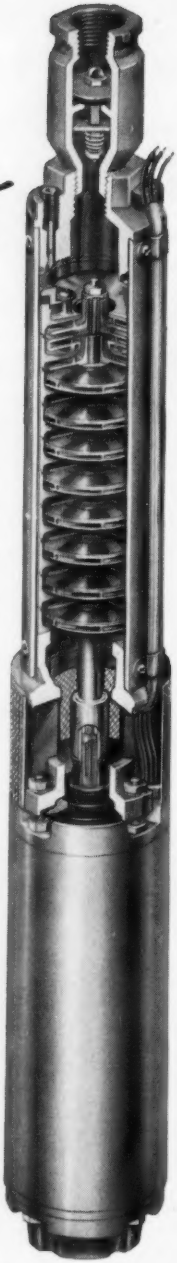

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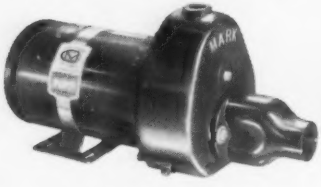
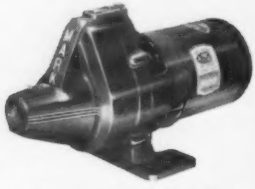


3-WAY CONVERTIBLE JET PUMP



MITEY MITE SHALLOW WELL JET PUMP

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The Driller

May 1961

Vol. 35 No. 5

P.O. Box 56
South Milwaukee
Wisconsin

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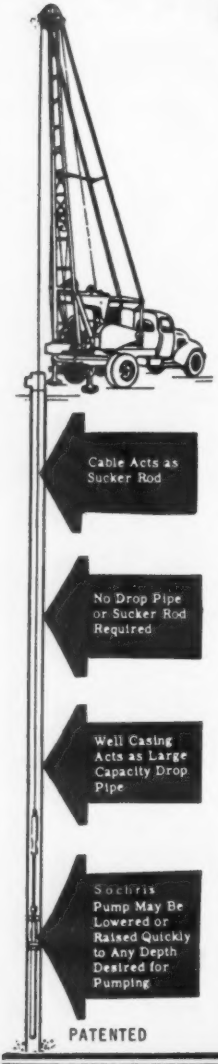
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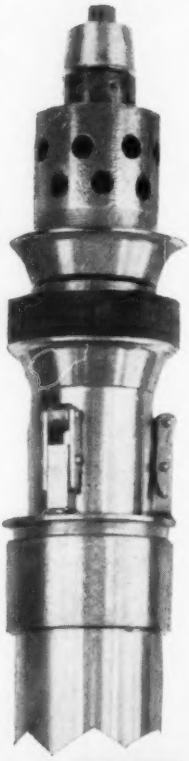

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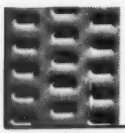
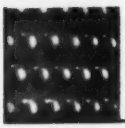
Made from Stainless, Monel, Everdur, black and hot dipped galvanized mild steel; for municipal, irrigation and stock wells—sizes from 4" to 36" diameter and thicknesses up to ¼"

5 PERFORATIONS



HYFLOW. Specifically designed for faster, stronger surge action. Horizontal perforations give greater strength against crushing.

LOUVRE. Louvre down keeps gravel out. Very popular for gravel packed rotary drilled wells.



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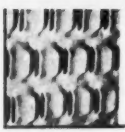
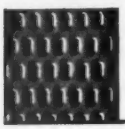


TWIN FLOW. Water enters from opposite sides of perforations. ½" to 1" long, 1/16" to ¼" wide.



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For welding...popular for modern, quick assembly of black welded casing.

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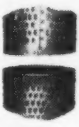
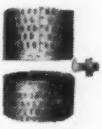
LAPPED JOINT
For riveting...popular for galvanized, riveted casing. Tapered ends, gang punched.



LAPPED JOINT
For bolting... 5/16" T-head bolts can be installed from outside.



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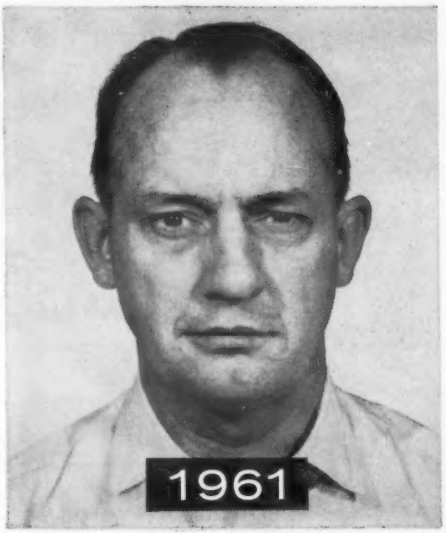

Can you identify this man?

This man is today's *tough* pump customer. You can recognize him by the following habits which he is known to follow. He *insists* on full value for every dollar he spends. He *looks* to his pump dealer for help in selecting the proper pump for his water needs. He *demands* that the pump he buys will deliver all the water he needs —whenever and wherever he needs it. He *expects* the pump he buys to last for years, without costly and unnecessary service calls. He *searches* for the best buy

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Hi-Lastic is a super-tough, extra-resilient wire line — originated by Macwhyte — especially designed for drilling water wells to 1000-foot depths.

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Why not give Hi-Lastic a real test on *your* rig?

You can get Hi-Lastic from your Macwhyte distributor in 1/2", 9/16", 5/8", 3/4", and 7/8" sizes. Ask for free copy of "How to Get More Service from Your Water Well Lines" — bulletin 5990.

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Here men with cable tool savvy constantly strive to improve tool design, to upgrade metals, to speed up manufacturing processes. All this with an eye to making a good drilling or fishing tool BETTER!

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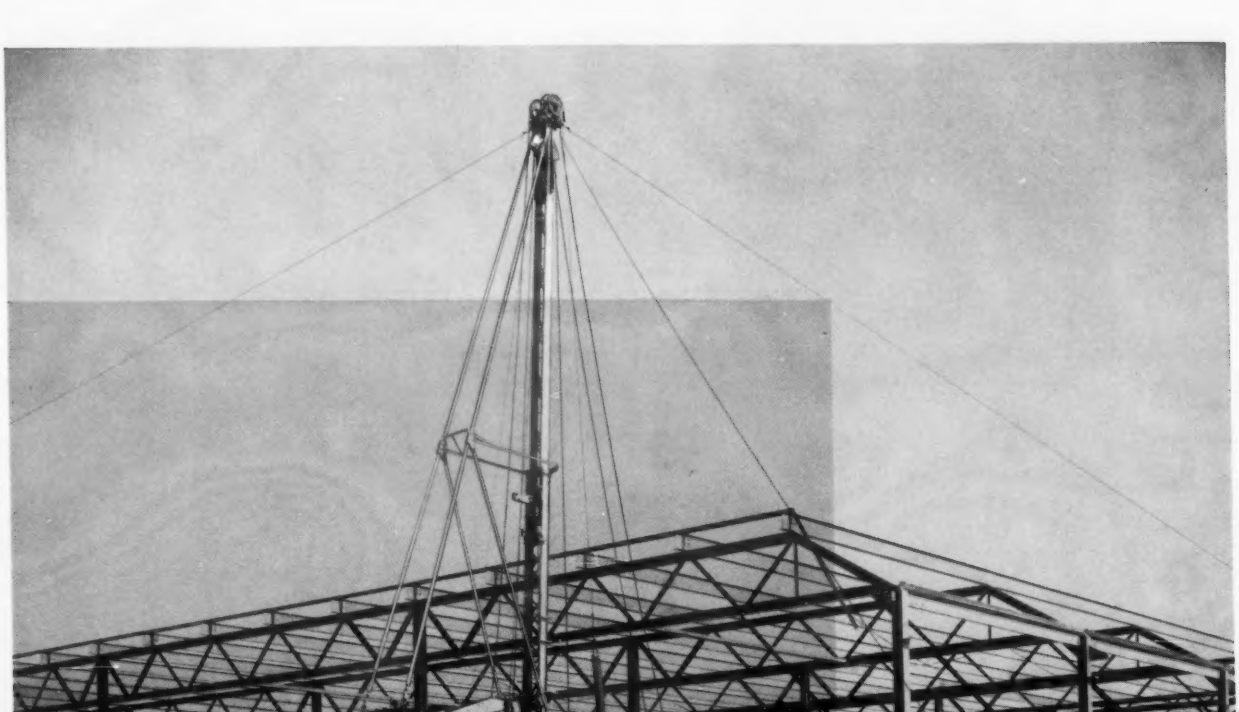

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BUCYRUS ERIE®

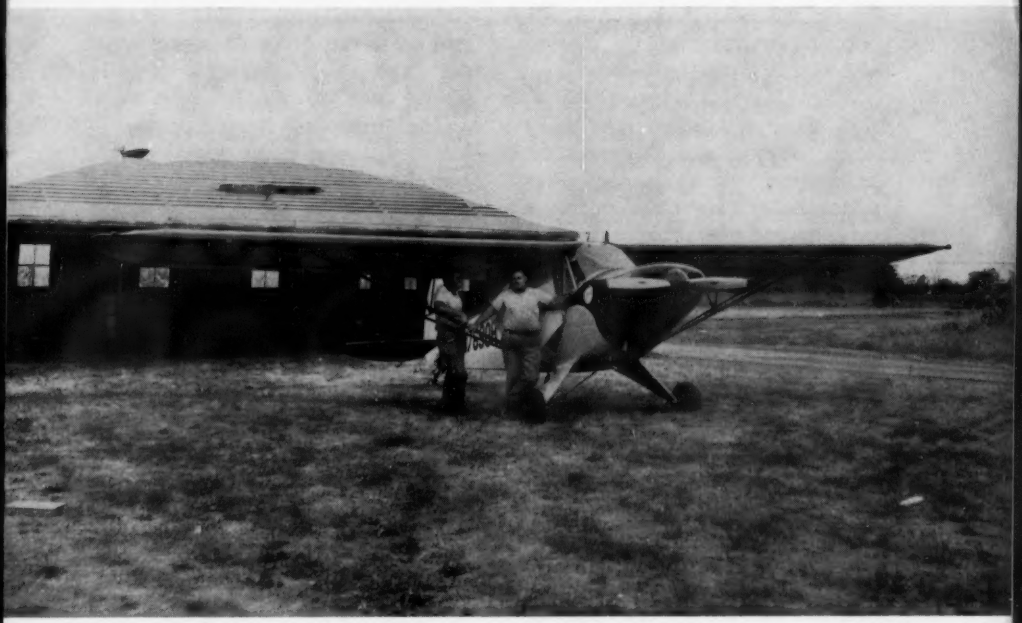
Most respected name in the field

Earl C. Baker Jr., left, and Lowell T. Baker prepare to pull and service pump for an Illinois village.

James C. Baker, left, and Lowell T. Baker roll company plane out of hangar on Baker farm.

The Remarkable Baker Family

Eight sons and a daughter help their mother in one of the oldest and best known firms in Illinois.



WELL drilling is often a family business, but rarely on the same scale achieved by the remarkable Baker family of Sigel, Ill. This family enterprise, E. C. Baker & Sons, is an old contracting business with lots of young men—and young ideas—to make it as modern as the best in the industry.

The firm is owned by Mrs. E. C. (Hester) Baker, and she has lots of help—from eight sons and a daughter. (Two other sons and two daughters are not members of the family firm.) With all of this help, the Baker family not only has a four-rig drilling business, but runs a 120-acre farm on the side.

The Bakers are upholding a tradition of leadership in the drilling industry that goes back to 1895 when their organization was founded by their grandfather, Levi Baker. With a spanking new, steam-powered Austin No. 2 rock drill, Levi Baker set out to provide dependable water supplies for farmers in the three-county area surrounding his home. His services were soon in great demand, and during the summer months his rig was often making hole around the clock, averaging from 15 to 30 feet a day at 45 to 65 cents a foot.

Earl C. Baker, Levi's son, served his apprenticeship as a helper, and became a driller in 1920. By 1937, when E. C. Baker's operations were featured in *The Driller,* he was heading up a three-rig operation with the help of two sons, Earl, Jr., and Paul. Equipment at that time included a Bucyrus-Armstrong 33-W, a 21-W and a custom-made machine of Baker's own design. Three helpers were

also on the payroll then, but as the younger boys came of age they took their places in the business.

When Earl C. Baker, Sr., died in 1955, there was little danger that the Baker name would disappear from the drilling industry.

Mrs. Baker's eight sons operate the company and man the machines without burdening their mother with any business worries. Management decisions and administrative work are handled chiefly by Earl, Jr., and Vernon. Bookkeeping is done by Mrs. Baker. Bonnie, 19, does secretarial work for the firm.

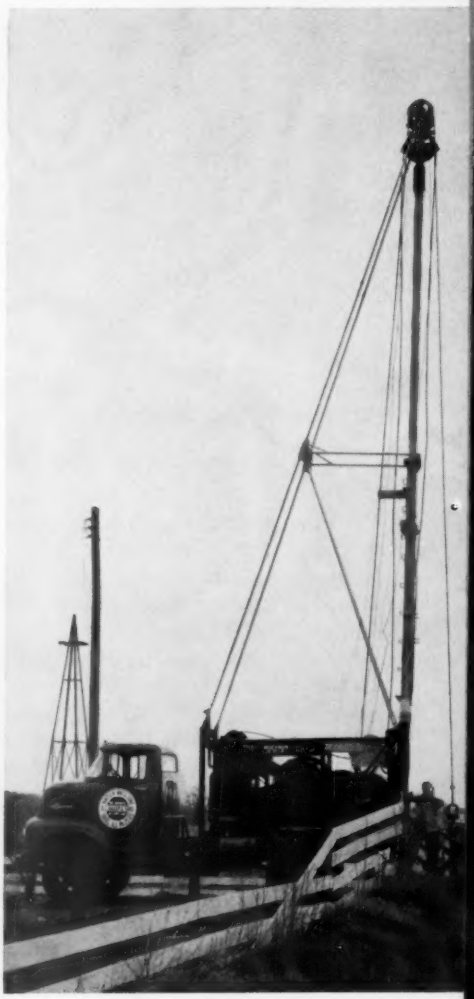
Earl, Jr., maintains a branch of the Baker company in nearby Effingham and operates the company's newest rig, a Bucyrus-Erie 22-W purchased last year. His brother Lowell helps with the 22-W. The Bakers also run two 20-Ws: a 1950 machine operated by James (Curt) and Arthur (Tuffy) Baker, and a 1954 model on which Floyd serves as driller and Donald as helper. A small auger rig, a Mobile B-54, completes the drill fleet. The auger drill, because of its more specialized function, is not used as frequently as the churn drills, and is operated by whichever Baker is available.

All Kinds of Jobs

The 1950 20-W is powered by a LeRoi engine; the other three rigs are driven by Hercules engines. All four are mounted on Ford trucks.

With this equipment spread, the Bakers tackle all kinds of drilling jobs, but the majority of their work (60 to 75%) is for farms. Residential wells comprise another 10 to 15%, and the rest is made up of industrial and municipal wells. The farm and home wells are usually 6 inches in diameter; industrial and municipal jobs are mostly 10 or 12-in. wells. But the Bakers can handle up to 24-in. work.

The auger drill is used principally for exploration holes for sand and gravel pit operators, boring for building foundations, and some core drill-



ing for mining and quarrying operations.

Other equipment includes a '56 Ford 2-ton winch truck, a trailer-mounted welder, and three service trucks, two of them with Miller generator-welders and power plants. The service trucks are a '56 Ford V-8, a '57 Ford V-8, and a '60 GMC V-6.

Completing the equipment inventory is one other vehicle not commonly found in drillers' operations — an airplane.

Emblazoned on the side of each rig and truck in the Baker fleet is the slogan, "We Service by Airplane." And this is more than just a slogan; it's an important fact. Three Bakers are licensed pilots, ready to answer any distress calls from customers whose pumping equipment has failed. And this service is especially important to big customers—municipalities, industries, businesses and farmers who stand to lose production or livestock if pump repairs are not made quickly.

Lowell T. Baker, one of the licensed pilots, recently made an emergency flight to a Fairbanks, Morse & Co. plant in Stuttgart, Ark., to pick up urgently needed turbine pump parts for an Illinois municipality. He took off at 5 a.m. and was back with the parts at 4 p.m. By car this trip would have taken 20 to 24 hours of hard driving.

Few service calls are actually made with the plane; few are really that urgent. But the fact that the service is available has proved a valuable selling point. Another advantage the plane provides is fast transportation, especially for Floyd Baker, when there are lots of calls to make to land the

(Left) Bakers' new 22-W is shown on a farm well job. (Below) Floyd F. Baker, at controls, and Donald K. Baker pull casing with 22-W.

James C. Baker, left, and Arthur L. Baker man 20-W on test hole for village of Gays, Ill.

bigger contracts. Bids and negotiations on wells for cities and factories may require Floyd to see several officials and engineers, and the light plane helps him to keep a couple jumps ahead of the competition and extends the territory that the Baker firm can economically serve deep into southern Illinois and central Indiana.

Other functions performed by the plane include hauling various Bakers to their rigs when they are working a long way from home, and fetching parts from distant suppliers. And the fact that the plane is seen hopping in and out of various Illinois and Indiana airports with the company name on its side has brought the Bakers several drilling jobs to supply water for airports.

Home base for the company airplane is a small sod strip on the Baker farm.

With a wealth of drilling experience that few firms can match, the 65-year old Baker firm will tackle almost any kind of drilling job. Deepest hole put down by the Bakers was a 600 footer that was 12 inches in diameter to 525 feet, and finished at 8 inches. This well supplied 35 gpm for tourist facilities at an Illinois state park. Another state park was the site of the biggest flow from a Baker well, 1,000 gpm pumped by compressed air from a 6-in. well.

When the Illinois Department of Conservation needed a test hole on the side of a steep hill for a proposed dam, the Bakers built a four-legged derrick over the spot and drilled with the rig parked on level ground 150 feet away from the hole.

Four of the Bakers, Earl, Jr., Donald, Max and Lowell teamed up to man the new 22-W on a recent tough assignment, The contract called for five 24-in. holes, each 64 feet deep, to house hydraulic elevator installa-

tions in a new Illinois state museum now under construction in Springfield.

The drilling was all tough going, in rock most of the way. And everything else on the job was challenging too. Working in the freshly dug building excavation, it took three days just to get the rig moved, set up, blocked and levelled for all the holes. Cuttings had to be pumped into special containers and trucked away from the site. In each hole a 20-in. casing was set, plumbed and carefully cemented. Despite all the problems involved in this project, the Bakers completed the work in less than 30 days.

But by far the most unusual job the Bakers did was an exploration hole into an abandoned coal mine. The owner of the property was considering using the mine for waste disposal, but he had to make sure first that the mine was not full of water. The entry shaft had been sealed with concrete 90 feet below the surface and backfilled with dirt. The Bakers were asked to try to sink a hole alongside the shaft entering it below the concrete plug.

Drill Crooked Hole

So they set out to construct a carefully drilled crooked hole. Using conventional tools they drove a slightly warped 10-in. casing, watching carefully to see that the hole continued in the direction of the shaft. They reduced to 6-in. casing, and finally to 4-in. as the hole went below the 90-ft. mark. The 4-in. pipe was driven through a foot of wooden planking that enclosed the shaft, and because of the angle at which the hole approached the shaft, it took between 10 and 15 feet of hole to get through the wood.

When the pipe broke into the mine shaft a ball was dropped in on a string, and it fell 600 feet to the bottom of the mine and was pulled out — bone dry. But before the owner could make use of this information the city outlawed his intended operation, and Bakers' crooked hole was capped and forgotten.

About four out of five wells in this central Illinois and Indiana region finish in sand and gravel at depths that range from 70 to 250 feet. The rest bottom in sandstone or limestone and may run to 400 or 500 foot depths. Penetration averages 35 feet a day over a year's drilling, including bailing, casing, pumping, and some hard rock work.

Service Wells

The Bakers install Johnson and Cook well screens and strainers, and occasionally make their own screens with a casing slotter. Sometimes they also fashion their own fishing tools to suit a particular fishing job. Well service work and acidizing are also offered by the Bakers.

Casing in a Baker-drilled well is all electric-welded. They have been using this method since 1938, and have found that welded casing is easier to drive and pull, and can be driven through tough sand formations where threaded and coupled casing just won't go. The welders are also used to hard-surface bits.

At the Baker headquarters is a shop with facilities to do all the equipment repair and maintenance necessary to keep up with a 100-well per year operation and the Baker farm. The shop is an authorized repair station for Fairbanks, Morse & Co. pumps. The Bakers are also authorized Rapidayton dealers, and they sell

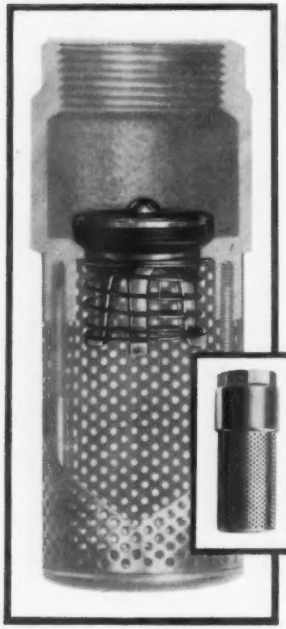
Monitor pitless units made by their namesake, Baker Mfg. Co.

The Bakers are optimistic about the future of their business, partly because they are equipped to serve a variety of drilling markets. During the past few years they have devoted a smaller percentage of their work to farms and more to cities, industries, resorts, commercial establishments, community wells for subdivisions and individual residential wells. This multi-market helps the drilling family even out the peaks and slumps that may occur in a single market.

But the Bakers are not neglecting the farmers, who have always comprised the biggest share of their drilling market. To keep their name before their farmer-customers the Bakers advertise in rural telephone directories and display at county fairs.

Drilling, flying and farming do not exhaust the list of interests of the Baker family. One of the Bakers designed and built his own racing car; another has a band that plays at social functions throughout the area and on radio stations; another is an accomplished amateur photographer and has made a movie, in color and complete with sound, showing the entire family drilling operation.

Growing up in a drilling family, with a well-equipped shop on the premises, has given all the Bakers a talent for mechanical things that has proved a big help in getting the most from their equipment and making their work easier. And the vast pool of drilling experience and know-how that is personified in the remarkable Baker family will keep their name among the leaders in the industry.



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* *Du Pont registered trademark for its acetal resin*

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"WE HAVE 'RUNNING-WATER' IN THE HOUSE-BUT SHE'S GOT TO GO!"
"NOW THERE'S A NICE PUMP!"
OK Pump Sales-Service LET US GIVE YOU PLENTY OF Pure Water

FROM THE MAILBAG

This page is open to readers who have questions on drilling or any problems related to drilling techniques and equipment. All letters are answered promptly by experienced drillers and engineers. Address The Driller, South Milwaukee, Wis.

Iron Appears After Drilling

To the Driller:

We sometimes pass through two or three water bearing sands before reaching rock. We like to develop these as there is an 80-20 chance of getting a stinker in the rock. Any one of these sands will usually produce enough water for a domestic well. Some of these sands produce a permanent supply of very good water; some in a few months time become hard and irony but remain passable; and some will soon be so loaded with iron as to be unfit to use. Is there any practical way to determine on the job if the water has or soon will have an objectional iron content?

J. B. Indiana

Both iron and hardness are very common water quality problems in the glacial drift aquifers of the Midwest. Iron particularly is an extremely variable component, and in some areas appears to be almost erratic in its distribution.

It is not uncommon for wells to have a change in water quality with time. Generally the change is a progressive one, but there are records of wells that have a change in water quality from day to day or even from hour to hour.

There are commercial test kits available to test for iron and hardness on the job. One such kit is complete for testing for iron, acid and hardness, and is small enough to be carried in the pocket. This kit is supplied by Sequestrator Products Corp.

The presence of some iron in almost all well water is not unusual, and generally is not objectionable, unless it colors or effects the quality of the water for domestic use. There are several water purifying filters and automatic water softening units offered for treating iron and hardness problems which are very effective in removing iron and rust as well as hardness in drinking water.

We know of no dependably accurate way of predicting whether or not a well will develop an objectional iron content.

The only suggestion we can offer is to make periodic checks on the water, after the well has been put into use, and note any trends in quality changes.

Bit Manufacturing Procedure Asked

To The Driller:

We have just purchased two Bucyrus-Erie drill bits. We are glad to say they are best materials we ever bought. We have developed a friendly argument as to whether these bits are molded or forged.

W. K. Arkansas

Bucyrus-Erie drill bits are made from a special, high-quality tool bit steel, provided by leading American steel mills under exacting specifications.

The steel billets used are drawn out and hammer-forged to shape and size

by the use of special dies and sizing tools, to maintain uniform grain structure and physical qualities in the steel, for maximum toughness and hardenability. Molded or drop-forged well bits have not proved generally satisfactory, and are not recommended by leading drill tool manufacturers for hard rock drilling.

Only the middle section of a steel ingot is used for making good bit steel. The top 35-40% is not normally used, nor is the bottom 5-10%. The middle 45-60% of the ingot is selected for the correct carbon content as the "cream of the ingot" for well drilling work.

The hardenability of the steel is a very important factor in good bit steel.

In quenching, it must take a hardness within definite limits. If it hardens too much it may spawl or burst, and if it fails to harden sufficiently, battering will result.

Well Water Level Measuring Device

To The Driller:

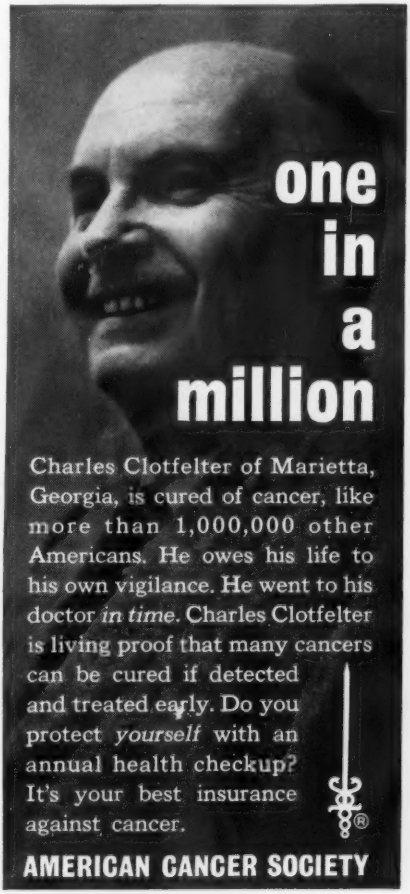
Please give me information on where I can get a price list on water level measuring devices.

R. P. Illinois

There are a number of devices on the market for determining water levels in a well, some simple and some complicated in their construction. Most pump manufacturers and jobbers have such equipment available, or can tell you where it may be obtained.

Water levels in wells may easily be determined by the use of a simple device, home made. In wells where there is plenty of room between the pump column and casing, and where the water level remains relatively high, a 4-ft. x ½-in. x ½-in. piece of wood on a cord can be used to take the measurement.

Another method for determining water levels in wells is by the use of an electric sounder. This may consist of an insulated wire, connected to a battery or magnet, through a light bulb. As soon as the sounder reaches water, a circuit is made, and the bulb lights.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million
Charles Clotfelter of Marietta, Georgia, is cured of cancer, like more than 1,000,000 other Americans. He owes his life to his own vigilance. He went to his doctor *in time*. Charles Clotfelter is living proof that many cancers can be cured if detected and treated early. Do you protect *yourself* with an annual health checkup? It's your best insurance against cancer.
AMERICAN CANCER SOCIETY

Driller Courtney Bach wasn't afraid to move when things got tough:

He Moved Over the Mountain

by RAY DAY

"DRILLING'S the most flexible business on earth. What other line will take you over the mountain on a barrel of gasoline, where business might be better?"

Courtney Bach was talking of past experiences at Midland, Mich.; Tyler, Tex.; Gallup, N.M.; and two locations in Washington. Despite these many business addresses over the years, Bach isn't a floater. He's moved around much of the U. S., but his roots now are deep in the fertile soil of Washington's Columbia Basin. He has a 7,000-acre livestock ranch at Blue Lake, which he runs as a sort of sideline. But he operates three drill rigs full time.

What Bach means by moving a drill business over the hill is that it sometimes pays to take this chance. In his own case, drilling for water over a wide geographical area has sharpened his sense of responsiveness to changing trends. Many Columbia Basin farmers discovered recently that cattle feeding, from potatoes and corn which grow well in this soil, is a

profitable business. Bach was just as quick to sense the new trend, and to promote livestock-watering wells. Today he does many of them, complete with Berkeley or Reda pump systems.

When the Atomic Energy Commission started to check radioactive spread with investigation wells, Bach was one of the area's first drillers to see the business potential. Since the first contracts were let, several years back, he's been successful in bidding a number of these jobs. They have a habit of paying off dependably, and lasting a year or so.

Water for Livestock

In the case of the livestock farmers, he doesn't have to do very much selling or very much bidding. He's in the ranch business himself, so he knows what losses a farmer can suffer if a well or pump fails overnight. Under those circumstances, it's easy for 3,000 steers worth $200 apiece to get "off their feed." The loss could pay for many wells. Owners have been quick to see this when Bach points it out, and to give him their business.

About 75% of the well drilling done by the U. S. Bureau of Reclamation in the last few years to provide homes for its ditch riders and maintenance men has been done by the unassuming driller from Coulee City. Last summer, too, he pioneered in drilling drainage wells to carry excess irrigation water away. On the first job the customer figured that each of the three wells drilled saved 15 acres for cultivation. That justified the expense of the job many times over.

Beef cattle are becoming more common in the Columbia Basin, creating a demand for wells in the feeder lots.

The area within a 75-mile radius around Coulee City, where Bach operates, is typical basalt and lava-flow country. A driller can't bid this type of work unless he has a good outfit.

The surface topsoil is some of the richest in the nation, which justifies the past 15-year development work done by the USBR on the great Columbia Basin Irrigation Project. Underneath this good topsoil are some alluvial gravels, sand and boulders. These formations eventually terminate on the basaltic lava rock underneath. Reaching down to great depths, the basalt is hard rock, frequently seamed by cracks or fissures. These openings are one of the best sources for good water in the territory. Usual practice is to case caving formations above this bedrock, and drill open end from there.

Economy Booms

When the USBR built Grand Coulee dam, and later installed the great banks of 62,500-hp pumps which lift Columbia River water into an ancient dry coulee, a new economic era sprang into being. One of the reasons why men like Bach have been able to build good drilling businesses is because new cities and towns have sprung up in the basin, established ones have mushroomed, and industrial enterprise is accelerating. It's opened up a whole new field for conventional water well drilling, for municipal and industrial wells, and for occasional jobs ranging up to 20-in. diameter and 500 feet deep.

The very toughness of the basalt is the prime reason the area isn't overcrowded with drillers. Frequently the lava flows of ancient time arranged themselves on a slope so that it's difficult to hold a hole straight. Recent-

(Above) Driller Courtney Bach tried three other states before putting down roots in Washington. (Below) Bach has a pair of Speed Stars.

ly, for instance, Bach drilled a basalt hole 4 feet at a time, then dynamited to hold the alignment straight. He's had his share of fishing jobs, too, as everyone else does who tries to punch holes through this basalt.

Bach's most recent drill purchase illustrates how he's moving toward more modern machinery. The latest machine, a Bucyrus-Erie 22-W, was purchased from Stardrill Co., of Portland, Ore. The rig is mounted on a Chevrolet 6x6 truck and has a number of features which seem tailor made for this territory.

"It's one of the safest machines I've ever seen," Bach said by way of explanation. "The sand reel is one of the fastest on the market. There's no better casing reel made than the one on this machine, and we like the derrick because of its sturdiness. It would be impossible to drop the derrick accidentally, even if an operator would die or fall while cranking it down.

"The rig is versatile for our work, too. You can get it in and out of tough places in a hurry, and set it up on a dime. Doesn't take all day, either. We've been down 800 feet without any trouble at all; we've handled heavy lengths of pipe, and even my youngest boy can operate the machine. We've ordered another new 22-W—that's how much we like it."

Lots of Experience

A wealth of broad experience lies behind his words. Bach's father was an oil-field driller. At the early age of 20, Bach owned his own steam driven machine. Later, during the depression in Michigan, he operated other rigs. He drilled with the Winninger brothers of Phoenix and Tucson, Ariz., in the early 1940s, and worked at Gallup, N.M. Eventually,

moving across the hill for better opportunity on the other side, he and his brother found themselves in Yakima, Wash., where they began to build up a drill business of their own.

He still owns and operates part of the fleet of machines built up at that time, with two Star 71s working. The other two Stars were traded in when the first Bucyrus-Erie 22-W was bought.

Butane Power

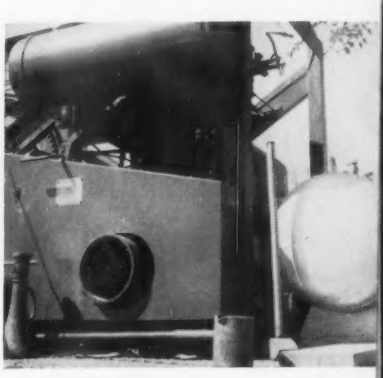
In addition to these machines, he has a Ford F-800 pump setting truck, a pickup truck with welding equipment, and a fair assortment of drill and fishing tools, and other supplies.

Long operating life for the new 22-W engine has been ensured by equipping the machine with an independent butane fuel system. Bach didn't remove the gasoline fueling system; he simply removed the carburetor to preserve it. Then the 300-gal. trailer-mounted butane tank was substituted. The rig works in average drilling on about 2 gallons of butane per hour. Use of butane maintains a cleaner engine; delivers slightly less power than gasoline; and is about 25 percent cheaper when all factors are considered.

Drill bits for hard-rock country are sharpened by forging, either by sledgehammer, or by a home-made triphammer device which he keeps nearby.

Bach has tackled some of the toughest jobs attempted in his area. When he started the new 22-W to work, he was called upon to set up over a frozen 8-in. casing, break it loose, and take the well down to 800 feet.

At Hanford, where the AEC wanted an 800-ft. well drilled straight



(Above) Bach's 22-W gets in close to pump house to service well. (Below) Gasoline tank is still in place, but butane fuel now powers rig.

and cased all the way, Bach was called on. The 22-W handled it nicely.

Perhaps one of his most unusual jobs was a 24-in. elevator weight shaft inside a building in Yakima. There, he had to break a rig down into parts, and reassemble it inside the building. He did the job with such success that when another similar project came up recently, his figures were used on the successful bid. Unfortunately the bid was later "peddled" to get a lower price. The job went sour later, the driller lost his business, and Bach was called upon by the bonding company to finish what he'd bid on realistically in the first place.

Welcomes Pump Work

He's done extensive drilling around the town of Soap Lake, Washington. There, the USBR has literally ringed the town with 125-ft. wells, ranging in diameter from 12 to 18 inches. Purpose: to prevent infiltration and seepage from the waters of a nearby irrigation equalizing reservoir.

Bach welcomes pump work. He's completed the installation in his territory of over 200 Berkeley domestic water systems, has installed many Reda submergibles, and has done other special jobs. For a time, he maintained a pump supply headquarters in Quincy, Wash. It was the one pump activity which didn't pay. Finally, after losing too much sleep waiting on customers until all hours of the night, he sold that business.

Does Complete Job

But he still does many pump and water systems jobs, and gets a considerable amount of FHA-financed business where pumps are required with the drilling. Doing the complete job tends to give him more business, and it also adds to general prestige of his reputation for knowing all about the water well business. Too, it seems to eliminate misunderstandings some-

Bach's Ford service truck is used to install pumps and to haul casing and supplies.

times seen among the driller, owner and pump installer. Bach knows on these jobs he's got a pump to set, so he drills the well accordingly, and makes sure he's got a fine installation before he ever moves away. In the 200 installations he's made, he's had only two cases of trouble.

Runs Own Rig

Central Washington is a driller-rare area. Some of the men who pass through are seasonal floaters. Others have experience which just doesn't fit the hard rock trickiness of the region. Because of the scarcity of drillers Bach does a great deal of the drilling himself, using the 22-W. Remaining rigs are entrusted to experienced drillers he's known and worked with for over a decade.

Bach pays his drillers 40% of the gross. That gives each man as much or more than he'd make from regular union wages. Out of the remaining 60%, Bach pays for operating expenses, taxes, depreciation and miscellaneous costs, and it leaves a fair return on his investment.

In his lifetime, Bach can point to many a success story in the water well drilling field. The Winningers of Arizona stand uppermost in his mind. When he started out for himself, he firmly intended to use their integrity and dedication to duty as models for his own business.

Result: he, too, has succeeded. His family, his ranch, current things like speedboating and recreation, his equipment came from a host of completed jobs which have added to the wealth of the Columbia Basin. And in Bach's words, "If things tighten up, you can always burn a barrel of gas, and get over the hill where business is better."

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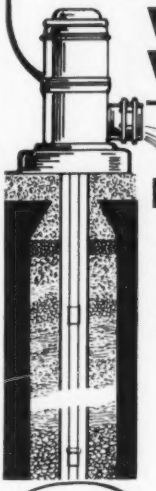

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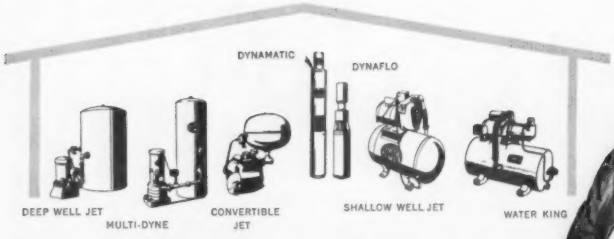

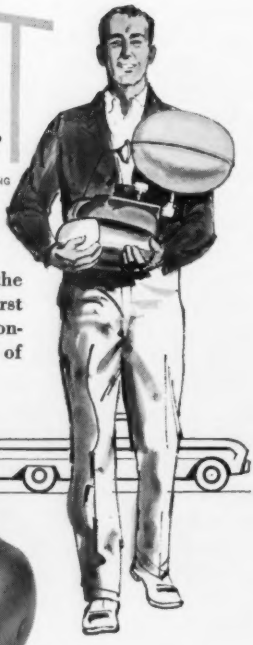

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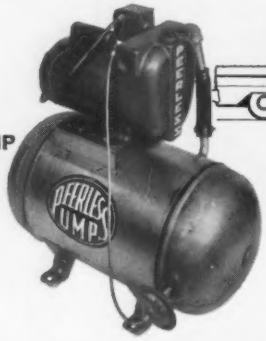

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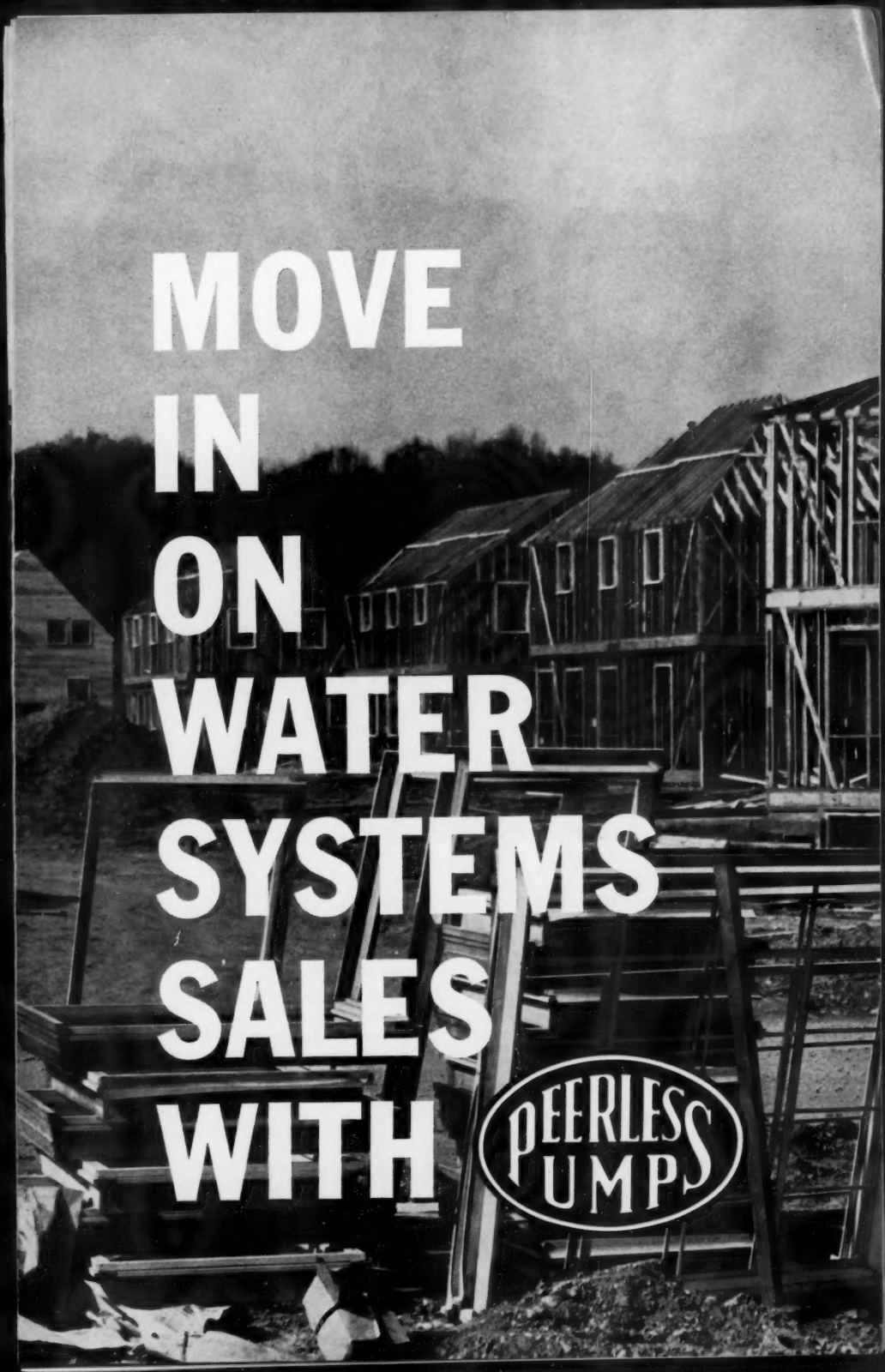
MOVE
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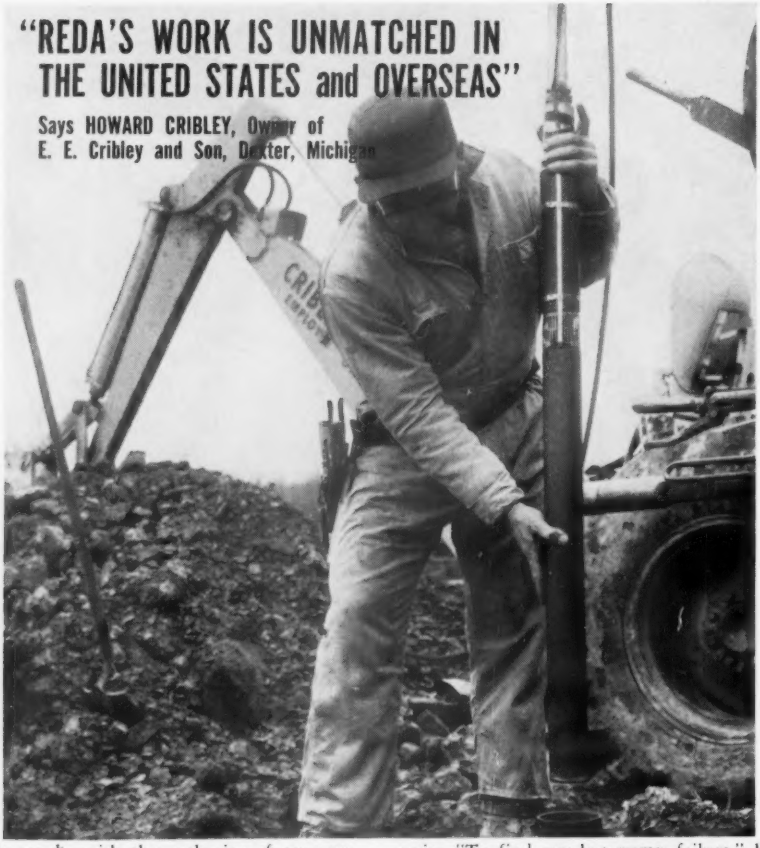
"REDA'S WORK IS UNMATCHED IN THE UNITED STATES and OVERSEAS"

Says HOWARD CRIBLEY, Owner of E. E. Cribley and Son, Dexter, Michigan



He speaks with the authority of over ten years of experience in the sale and service of Reda Submergible pumping units. E. E. Cribley and Son are Well Drilling Contractors and Pump Installers serving the Ann Arbor-Dexter, Michigan area. Their first Reda Pump was installed in 1949. Since that time they have sold over 532 units. "To find our last pump failure," he states, "we had to go back to June, 1958 . . . 2½ years without a Reda Pump being pulled from the well!" Checking back over 4½ years E. E. Cribley's records show only 4 pump replacements. This performance record is further proof of Reda's top quality and workmanship.

Reda Submergible Pumps provide these **quality packed** features:

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SIGN OF QUALITY SUBMERGIBLE REDA PUMPS

Cleaning Deep Wells and Pumps

by CLAUD R. ERICKSON
Board of Water and Light
Lansing, Michigan

As the demand for additional water supplies steadily increases, communities dependent on wells must make the most efficient use of their existing facilities. It is believed that this aspect is equally as important as the development of new wells in the effort to maintain adequate water supplies.

Two factors are extremely important to the efficient operation of a well:

First is the "stimulation," or as it is sometimes called "redevelopment," of a well which has declined in productivity. This is accomplished in many ways depending largely upon the type and characteristics of the well and water.

The second factor is the cleaning and, if necessary, reconditioning of the pump when it becomes apparent that this work can be economically justified.

In water wells there are four basic reasons for a decline in production: (1) lowering of the static water level; (2) inefficient pump operation caused by worn, corroded, or plugged parts; (3) deposits of scale, corrosion products, and micro-organism growths in the well screen area and on the face of the formation; (4) fouling of the well screen area by mud, sand and silt. Treatment of the well and pump can help in recovering lost pro-

duction if the cause is due to any or all of the last three items.

A brief review of ground water chemistry will aid in the understanding of the manner in which material is deposited in wells and pumps, thereby reducing capacity.

Rain picks up carbon dioxide as it falls through the atmosphere, and the dissolved carbon dioxide is further increased by decaying organic matter in the soil as the rain water penetrates into the earth. The solvent power of this water is greatly increased by the addition of carbon dioxide, and minerals such as bicarbonates, sulfates, chlorides of calcium and mangesium are readily dissolved in the ground water. Often present, but in smaller quantities, are compounds of iron, manganese, silica, nitrate, fluoride and others.

Pumping a well reduces the static pressure in the vicinity of the well by an amount equal to the drawdown. This is caused by the resistance to flow of the waters through the water bearing formation. This reduction in pressure, plus an increase in water velocity, releases some of the carbon dioxide as a gas and thus reduces the ability of the water to carry the dissolved minerals in solution. Minerals such as iron hydroxide, calcium carbonate, and magnesium carbonate are then deposited in the pump, in the well screen openings, in the gravel wall and on the sides of a rock well. Direct deposition of suspended matter from the water may also occur.

Design Is Important

Careful attention to the design of the well and pump helps considerably to minimize deposition. Well screens of greater length and larger diameter will reduce entrance velocities and moderate pumping rates will hold the drawdown to a minimum. Mineral deposition on the upper portion of the screen will occur if the top is exposed by over-pumping. To prevent this the pumping level, if possible, should be maintained at least five feet above the top of the screen.

With the several different types and designs of water wells and the wide variation in the composition of the deposits formed it is apparent that no single treatment would be suitable for all wells. It is probably beyond the capabilities of many municipalities to correctly diagnose the trouble in a well in which the production rate has fallen off, and then to prescribe the best and most economical treatment. In most instances it would be wise for the municipality to obtain the advice and services of water well experts before embarking on a well stimulation program.

Stimulation Defined

Stimulation is generally defined as the treatment of a well by mechanical, chemical, or other means for the purpose of reducing or removing an underground resistance to flow. The term as used here does not include so-called rehabilitation or reconditioning, which is the actual reconstruction of a well by redrilling to a larger diameter or drilling to a greater depth.

Stimulation as used here also does not include the treatment of a well for the purpose of clearing the produced water of sand, sediment, turbidity or impurities introduced during drilling operations.

Common methods of well stimulation are:

Surging: The process of surging involves the movement of water back and forth through the well formation

in an effort to remove the fine particles of material plugging the well walls. There are several methods of obtaining a surging motion. The most simple manner consists of merely high rate production alternated with pump stoppage. This is often accomplished by means of a timer which starts and stops the pump at frequent predetermined intervals. This is continued for at least 24 hours after which a production test should be run to determine whether or not any improvement has been obtained. Further surging will depend upon results of the test.

Surge With Rig

A more violent and effective method is accomplished by means of a surge block constructed of wood approximately one inch in diameter less than the diameter of the well. The block is usually formed of several layers of wood with canvas or heavy rubber between the separate pieces and projecting slightly so as to form a seal against the sides of the well. This block is secured to the drilling rig and moved up and down so as to create a vigorous movement of water through the well formation.

Other methods of obtaining surging action are with compressed air as in an air lift pump and with dry ice.

Surging is often used in conjunction with chemicals to increase their effectiveness. Some of the chemicals used are phosphates, chlorine, acids and wetting agents, the selection depending on the type of well and the nature of the accumulation.

Vibratory Explosion: This is a form of dynamiting in which the explosive is divided into many small charges and arranged to fire in rapid sequence

(Continued on page 38)

From Tait's Famed Engineering Division which revolutionized the design and performance of water systems in the 50's now come still greater advances, heralding a

NEW ERA*

OF PROFIT WITH

Rapidayton

For details, turn the page →

NEW ERA *in performance* • **NEW ERA** *in profit*

Rapidayton subs

have overload protection in the motor

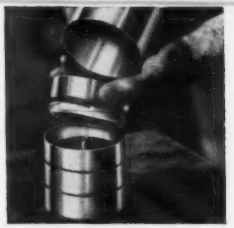
HERE!

where it belongs—
automatic overload protection
provides greater sensitivity
cuts nuisance service trips

NEW exclusive automatic overload in motor (in sizes through 1 h.p.) gives protection 15 times as fast, guards instantaneously against possible motor burn out. Automatic reset

Important new advances in the design and construction of Rapidayton 2-wire and 3-wire submersibles herald a NEW ERA of performance and profit. NEW automatic overload protection in the motor (in sizes through 1 h.p.). NEW loose tube construction for quick, easy disassembly at well site. NEW models for wide variation in voltage. NEW deeper settings. NEW higher performance, greater dependability. These, and other, years-ahead advances open a NEW ERA for submersibles. Now, more than ever, it is easier and more profitable to sell the leader: Rapidayton.

NEW loose tube construction (right) makes Rapidayton easiest sub in the world to disassemble at well site. Just unscrew pump tube from motor casting, then tube and stages can quickly and easily be taken up off motor shaft.



39 MODELS TO CHOOSE FROM

The complete Rapidayton 4" sub line has been expanded to 39 models: The highly-competitive 2-wire "Star" series, 5 models; 2-wire "Dolphins*," 11 models; 3-wire "Dolphins," 23 models. Four capacity series: 5, 10, 18, and 25 gallons per minute. Total head, 1000 feet. Get your **exact** needs from Rapidayton.

Rapidayton

division **The Tait Manufacturing Company, Dayton 1, Ohio**

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DEEP WELLS . . .

(Continued from page 35)

producing a vibrating effect. Gas released from the explosion creates a bubble which expands and contracts, gradually decreasing in size until it is finally damped out. The expansion and contraction are supposed to produce a strong surging action in the formation during the period when the vibrations are knocking particles and deposits loose.

Acidizing: This is a popular, and in many cases, an effective method of stimulating and cleaning wells in Michigan. The acid normally used is muriatic, which is a commercial grade of hydrochloric and contains a small percentage of impurities. The usual concentration before injecting into the well is 15 percent.

Inhibiting Agent

An inhibiting agent should be added to the acid before use in order to delay attack from the acid on the metals in the well structure. Inhibitors form a microscopic covering over the metal, holding the acid away. In time (four or five hours) the protection is broken down and the acid attacks the metal. For this reason it is important that the acid solution is not allowed to remain in the well for prolonged periods. Inhibitors slow down slightly, but do not prevent the reaction with iron or carbonate bearing deposits.

Anti-foam additives are now available to increase effectiveness of the acid and also prevent overflowing due to foaming.

Stabilizing chemicals are also frequently added to inhibited muriatic acid in order to prevent secondary precipitation of dissolved iron deposits. Without a stabilizing agent the dissolved iron is likely to coagulate in a gelatinous mass and settle to the bottom of the screen with resultant plugging. The gelatinous mass of ferric hydroxide will also form in the interstices of the sand and gravel outside the well screen and can in some cases result in nearly total loss of water production. Once such a condition has occurred it is very difficult to remove the deposit and restore the well.

Best in Drift

Acid is especially well suited to the stimulation of drift wells where the screen is often subject to iron and carbonate deposits. Experience has shown that acid is seldom beneficial for the stimulation of sandrock wells, however, it can often be useful in the development of limestone wells. When used on limestone wells it is advisable to treat the acid in order to provide a delaying action so penetration can be achieved before acid is dissipated.

Surging of the acid solution is normally accomplished by means of the pump. Where the static water level is low and there is sufficient volume in the column above the water level, this can be done by closing the shut-off valve at the pump discharge and installing an air release valve at the top of the column to expel air as the water rises. If there is insufficient volume in the column it is necessary to use an external tank.

Muriatic acid should never be used in a well equipped with a concrete screen or casing as it will soften and disintegrate the concrete.

For treatment of wells of this type citric acid is sometimes used. This is a much weaker acid than muriatic and

a correspondingly larger amount will be needed to remove deposits, resulting in a higher treatment cost. The approximate cost of these acids per hundredweight is $7.50 for muriatic and $38.00 for acidic.

A recent development borrowed from oil well techniques is pressure acidizing. This consists of injecting large quantities of acid solution into the well at high pressures thereby producing deep radial penetration. The formation being treated must be sealed off from overlying formations or the acid will not penetrate radially far from the well.

Strength Important

The concentration used for treatment is very important since a solution that is too weak will not be effective and one that is too strong will displace or dissolve more material than can be carried in suspension or solution by the spent acid. This results in heavy gels or precipitates with great plugging powers.

Polyphosphate Treatment: The use of polyphosphates for well stimulation is generally confined to drift wells. It can successfully be used for cleaning screened sand and gravel wall wells which are plugged with fine sand, silt, clays, colloidals, and disseminated shales. The polyphosphates react with and hasten the removal of these materials which are located in the water bearing formations or placed there during well drilling operations. Polyphosphates can also be used to dissolve certain forms of soft iron deposits and where these are present a considerable saving can be effected over the use of acid treatment.

Extreme care must be taken in the use of polyphosphates since misapplication may result in disastrous failures and great difficulties. For example, it should not be used in the treatment of wells with multiple screens in which the water bearing strata are separated by clay or shales. The action of the polyphosphate on these materials will cause disintegration and infiltration into the producing sands or gravel and further reduce the well productivity.

Wetting Agents

Detergents are sometimes used in conjunction with polyphosphates as a wetting agent and result in better penetration of the formation.

Polyphosphates range far through pH from acid through basic. Proper selection should be made only after study of well construction, water analysis, well log, amount of production loss, and rate of loss.

Dynamiting: This method of stimulation is limited to rock wells and is accomplished by setting off charges of fifty percent nitroglycerin dynamite at frequent intervals along the length of the water bearing rock. A typical well shot in a 14-in. sandrock well might use five to ten pound charges every five feet. A recent innovation has been to use a string of high explosives which produces a linear explosion as distinct from a point explosion. Less material is removed in this manner, and therefore the debris can be cleaned out in a shorter period of time. And since plugging of the formation ordinarily occurs to a depth of only one to two inches, this method should be equally effective as the point blasting system, and experience seems to bear this out.

Larger charges of dynamite are required in a limestone well since the limestone is less porous than sand-

stone and therefore more surface area is needed. Blasting is usually required when developing a new limestone well and the size of the individual charges might be expected to range from 50 to 150 pounds. Dynamiting should only be done by persons properly qualified for the job. Also in some locations it is necessary to obtain police permits to handle and use dynamite. Check local and state regulations.

Chlorination: Chlorine is almost always used as a final chemical treatment before putting a well back in service. At a concentration of 50 ppm of available chlorine in the well it is an effective sterilizer and with a concentration of 200 ppm it will destroy certain types of iron bacteria. The destruction of sulphur and slime bacteria can be accomplished with chlorine concentrations of 500 ppm.

Chlorine is sometimes used alone as a complete well treatment when only the above mentioned materials are present, but is more frequently used as a supplement following an acid or polyphosphate treatment, and the concentration normally used is 500 ppm.

Surge at Intervals

After the chlorine is placed in the well it should be surged with the pump several times every thirty minutes. At the end of four hours the well should be pumped to waste since the solution will cause corrosion of the metal parts and will oxidize the ferrous iron in the water to insoluble ferric iron if left longer.

Chlorine and polyphosphate are sometimes used together in a common solution and prepared mixtures can be obtained in this form.

Chlorine as purchased for well use comes in a powder form as calcium hypochlorite. It is commonly referred to as H.T.H. or Perchloron.

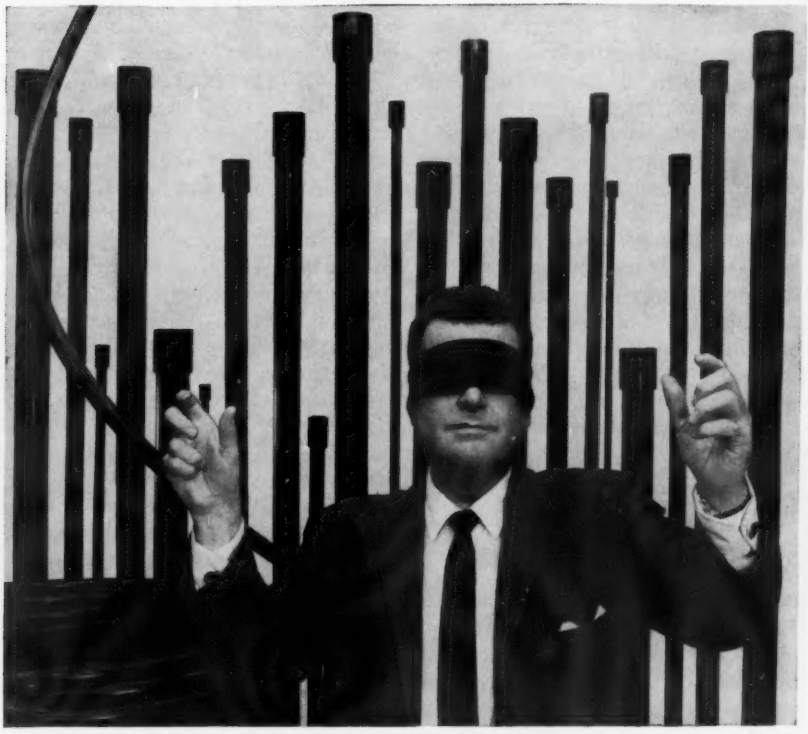
Compressed Air: Compressed air is occasionally used in drift wells to remove silt and fine sand from the area immediately surrounding the water screen and thereby lessen the resistance to flow. This is usually accomplished by means of double surge blocks located approximately two feet apart. The surge block assembly is lowered to the bottom of the screen and compressed air is admitted between the blocks which confine the air and concentrate the blowing action between the blocks. The blocks are subsequently raised in steps until the entire screen has been covered.

Air Lift Pump

By using two pipes, one for water and one for air, an air lift pumping action can be obtained and the well surged in this manner, after which the proper valves can be operated and the well pumped out. This will remove any sand, silt, or other deposits loosened, and a rough check can be made to note improvement.

Dry Ice: Dry ice has been used to a rather limited extent in producing surging and also as a means of obtaining back pressure with a closed well head. Surging can be varied from light to heavy by changing the quantities of dry ice used. Ten to fifteen pounds would be used for light surging of a 6 to 10-in. well and twenty-five to fifty pounds would be required for heavy surging. For larger diameter wells proportionately larger quantities would be required. Care must be taken not to exceed one pound for every eleven pounds of water in the well or freezing will result.

While the use of dry ice is an in-



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expensive and convenient method of agitating a well, it has been largely outmoded by more effective means of well stimulation.

Cleaning Pumps: When the internal parts of a deep well pump become corroded or covered with deposits, loss of efficiency and pumping capacity results. The first indications of trouble are higher amperage or kilowatt readings indicating a loss in pump efficiency and this is followed by reduced flows as the buildup continues.

Pull and Dismantle

If it is apparent from test data or daily log sheets that the pump requires attention and the unit has been in continuous service for a period of three or four years or more it would probably be advisable to pull and dismantle the pump for cleaning and repair. If, however, the pump has been installed for a shorter period, and the nature of the deposit from past experience is known, it is often advantageous to clean the pump in place.

This is usually done with a 15 percent concentration of inhibited muriatic acid with a stabilizer added to hold the material in solution or by means of a polyphosphate compound. Occasionally, as in well stimulation, both acid and polyphosphate treatments are used if the exact nature of the deposits are not known, or if required by the nature of the deposits. The material is surged with the pump after which it is discharged and followed with a 500 ppm chlorine solution.

It will be noted that cleaning a pump in place and well stimulation by acid, polyphosphate or chlorine are accomplished in the same manner and the two operations are therefore often done simultaneously.

If a pump has been in operation for a period of several years, or there is reason to suspect excessive wear, the unit should be pulled, cleaned, disassembled and inspected. This will permit worn parts to be repaired or replaced, and clearances adjusted.

If a large acid tank is available the entire pump bowl can be dipped in an acid bath and roughly cleaned in this manner before disassembly. If not, the pump assembly is scraped and wire brushed, after which it is dismantled and the sub-assemblies cleaned in a similar manner. The parts which cannot be reached by brushing can be cleaned by dipping in a 15 percent solution of inhibited muriatic acid. The column and shafting are also thoroughly cleaned by brushing, scraping and flushing.

It is often necessary to rebuild the bearing areas on the column shafting and pump shaft, and this can sometimes be done by means of metal spray of the same type as the parent material.

Protective Coating

After cleaning the column, the inside and outside should be protected with a bitumastic or other corrosion resistant material which will not impart a taste to the water.

Well Analysis: The following procedure illustrates the method which could be used in determining the proper treatment to increase the productivity of a failing well.

(1.) The static water level should be taken, since a drop in level could cause reduced production, higher pumpage costs, and possibly cavitation, if the pump was drawing air. At least one hour should be allowed

after pump shutdown before taking static level.

(2.) The pump should be started and the pumping level taken. The drawdown (pumping head-static head) thus obtained should be compared with the drawdown when the well was new. The pump should be operated at least one hour before measuring the level. An increase would indicate plugging of the formation or screen and the need for well stimulation.

(3.) With the pump discharge valve closed the pump pressure should be taken and an attempt should also be made to duplicate the manufacturer's pump curve. This is done by opening the discharge valve in steps and noting the pump discharge pressure and corresponding flow. Amperage or kilowatt readings should also be taken at these points for a check on pump efficiency. For complete test information it may be necessary to disconnect the pump from the transmission main and install a temporary discharge line with a calibrated orifice for measuring flow. It is often possible, however, to obtain sufficient points with the pump connected to the transmission main if a suitable flow meter is installed.

Requires Attention

If the test data thus obtained indicates that the pump is operating at substantially less than rated efficiency or if the head-capacity curve is low or unusual noises are evident, the pump or column obviously require attention.

(4.) A representative water sample should be drawn and sent to a laboratory for analysis. From this water analysis, and a knowledge of the type of well, and formation, a recommendation can be made by experts as to the proper method of treatment.

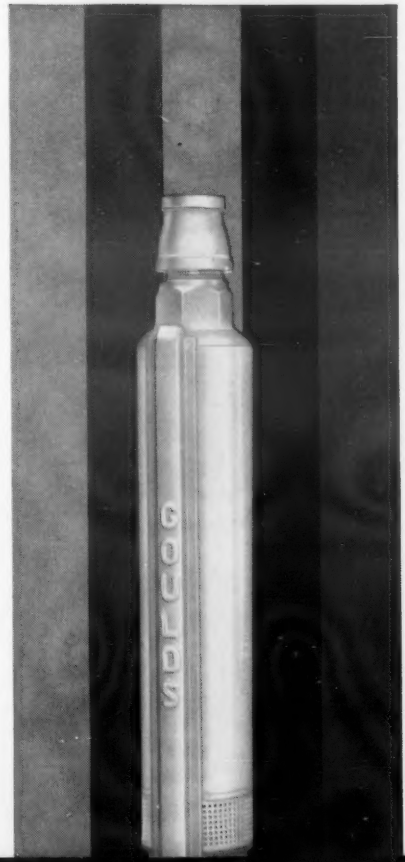
In order to properly evaluate when a well should be stimulated, or a pump cleaned, it is necessary that adequate and continued data collection be made. It is especially important that full test data be obtained and permanently filed when the new well and pump are initially put in operation.

Well stimulation and pump cleaning can be economically justified whenever the cost of obtaining additional needed water supplies in this manner is less than the cost of securing an equal water supply by drilling and equipping new wells.

Trial and Error

A large amount of data and experience has been accumulated by those specializing in water well stimulation, and by a careful study and analysis of the well it is possible to predict fairly accurately the method most likely to obtain the best results. It is not an exact science, however, and it is frequently necessary to arrive at the proper treatment by trial and error, particularly if full information regarding the nature of the deposit or well formation is not available.

(The author wishes to express his appreciation to the one hundred water supply authorities and commercial firms who responded to the questionnaire on well cleaning and to Messrs. N. E. Gunderson, H. L. Keith, and Ervin Stahl of the Layne Northern Company who contributed to the paper. Thanks are also due Messrs. A. J. Lange, C. W. Dudley, and E. P. Darlington of the Board of Water and Light for their comments and aid in compiling the data.)



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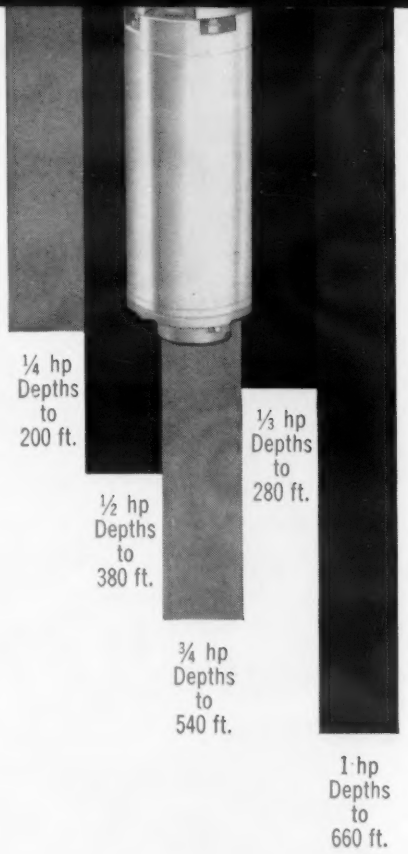
Now you can be more competitive in the sub **market!**

The new Series UES makes your dollar go deeper with Goulds. For example, ½ hp UES pumps from 300 feet at 40 pounds pressure . . . a rating that previously required 1, 1½ or higher hp ratings.

Goulds UES subs give you higher service pressures at all rated depths . . . **and with safe motor loads.**

LICKS LUBRICATION PROBLEMS. You never have to change the lubricant in a Goulds sub . . . motor is water-lubricated. Motor starts easier, lives longer because of Goulds perfectly balanced, lightweight rotating element. Hex shaft provides surest, positive drive for proven Byrite impellers.

TIMESAVING CABLE ARRANGEMENT cuts installation time. One-piece motor lead drop cable (three leads in a single cable jacket) does away with splicing on the job and prevents wrong connections at the pump end.



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LESS hp
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RED-HOT SUBS
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CONTROLS ABOVE GROUND. Compact pump control enclosed above ground for easy accessibility. Starting relay, capacitor, overload protectors are all on the surface, easy to get at.

SERVICE IT IN THE FIELD. Goulds subs are as easy to service as jets. You save time, money, and build customer good will because you don't have to send the pump to the factory for repairs.

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INDUSTRY NEWS

New Pump Shipments Down 12% Last Year

Factory shipments of domestic water systems in 1960 totaled 689,792 units and were valued at a total of $61,638,000. This represents a 12% decrease from the 786,325 units shipped in 1959, according to figures released by the U. S. Department of Commerce.

Shipments for the first two months of 1961 totaled 109,176 units, an increase of 4% over the same period of last year.

Deep-well systems, not including submersibles, accounted for 19% of the number of units and 20% of the value of all water systems shipped last year. Shallow-well systems amounted to 241,885 units, or 35% of the total. Shipments of 214,615 convertible jet units and 102,380 submersibles accounted for the remainder.

Total water systems shipments last year were the lowest for any year since 1952, and the dollar value was the lowest since 1951. The Department of Commerce report is compiled from information gathered from farm and domestic pump manufacturers, and the values given are the manufacturers' net selling price, f.o.b. factory. No estimates of retail sales or dealer inventories are made.

A continuing trend toward submersible pumps is apparent. Submersibles were the only type of pump that moved in greater quantities last year than any previous year. During 1960, 14.8% of the pumps shipped were submersibles. In 1959 they accounted for 11.1% of all shipments.

Shipments of miscellaneous types of domestic pumping equipment, such as hand and windmill pumps, pump jacks, cylinders and windmill heads and towers, were valued at $3.5 million in 1960, a decrease of 27% from 1959.

Shown below are some of the 450 drillers who attended the 1961 convention and short

Macwhyte Appoints New Chicago Sales Manager

William J. Anderson has been appointed Chicago district sales manager for all products of Macwhyte Wire Rope Co. He will headquarter at the company's Chicago offices and warehouse at 228 S. Desplaines St. and will be responsible for all sales in the Chicago territory. Factory and general offices of the company are located in Kenosha, Wis.

450 Attend Nebraska Convention at Lincoln

More than 450 attended the 30th annual convention and short course of the Nebraska Well Drillers association in Lincoln, Neb., in February. Included were 210 drillers, 160 representatives of manufacturers and suppliers, and more than 100 guests.

All incumbent officers of the association were re-elected. They are: Gus Carlson of Loomis, president; Lawrence Williams of Bellvidere, vice-president; Merle Mook of Lincoln, treasurer; G. R. Svoboda of the University of Nebraska, secretary; E. D. Reed and V. H. Dreeszen, both of the university, directors of the annual short courses.

Alden C. Christensin of Irvington was elected to a three-year term as director succeeding Charles Condon of Aurora. Other directors are Wayne Haggard, Ogallala; and L. W. Dowell, Gering. District chairmen are: Emil Blomquist, Ainsworth; Gus Carlson, Loomis; Clyde Harmon, Scottsbluff; Keith Muenchau, Eagle; and Fred W. Salmon, Wakefield.

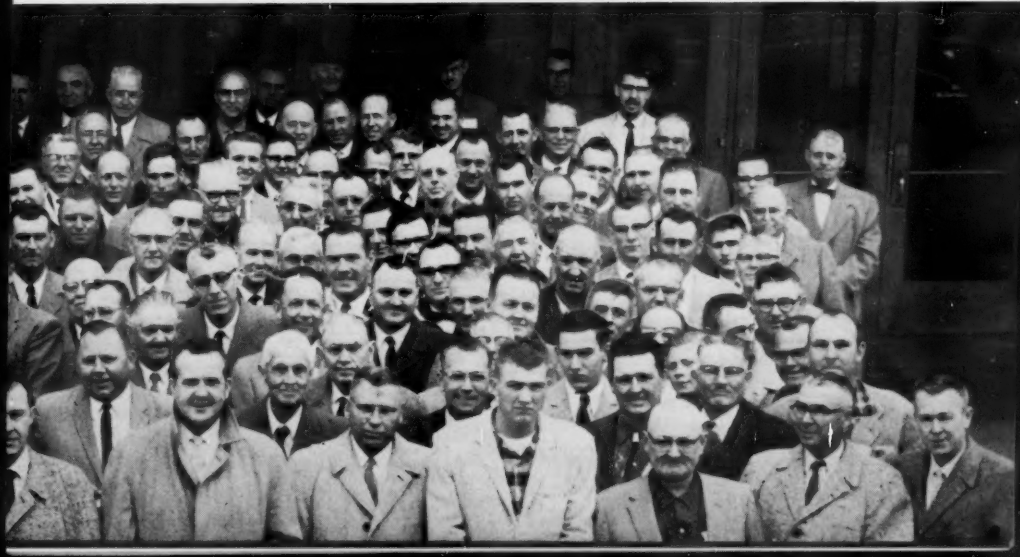
L. B. Spang Retires From Tool Concern

Loyal B. Spang, 67, vice president of Spang & Co., Butler (Pa.) manufacturers of cable drilling tools, has retired after more than 50 years of service. He is a son of G. A. Spang, who founded the company in 1894. Spang and Co. since that time has expanded its operations to include branches at Mt. Pleasant, Mich.; Bolivar, N. Y.; and Winfield, Kan.

Stemen Elected Head Of No. Dak. Drillers

L. H. Stemen of Burlington, N.D., was elected president of the North

course of the Nebraska Well Drillers Assn. held in Lincoln, Neb., during February.



Dakota Well Drillers Association at the group's recent convention. Other officers elected are: vice president, Lloyd Erickson, Beulah; secretary-treasurer, George Opp, Glen Ullin; directors, Fred Simpson, Bisbee; Pete Lommen, Drake; K. D. Thompson, Dickinson; NWWA director, Art Johnson, Devils Lake.

The association's 1962 convention is scheduled to be held in Fargo, N.D.

Record Attendance At Missouri Meeting

Record attendance at the Missouri Water Well Drillers association convention was reported by Service Secretary Robert D. Knight. The 148 drillers who registered included 101 members of the association and 47 guests. Also attending were 87 associate members of the group's manufacturers and suppliers division.

Exhibits included 41 indoor displays and 5 drill rigs.

All 1960 officers were re-elected to the same offices for 1961. They are: William R. Dunham of Osceola, president; Joseph F. Berg of Springfield, vice president; Harold H. Scott of DeSoto, secretary; Robert W. Politte of DeSoto, treasurer. Knight was reappointed service secretary.

J & L Appoints New Wire Rope Distributor

Gate City Steel Co., 1602 North 11th St., Omaha, Neb., has been appointed a distributor for the Wire Rope Division of Jones & Laughlin Steel Corp. in Iowa, Nebraska, North Dakota, South Dakota, Montana, Colorado, and Kansas.

The new distributor, who has a branch warehouse in Columbus, Neb., will handle wire rope and wire rope slings.

Bucyrus-Erie Names Smith Manager of Sales Promotion

Robert L. Smith has been named manager of sales promotion for Bucyrus-Erie Co., South Milwaukee, Wis.

He had been a sales representative attached to the firm's Chicago regional office for six years. During that period he represented the company in the Detroit area and in other midwestern territories.

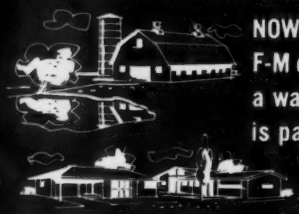
A graduate of the University of Kansas City, Smith was employed from 1949 to 1955 as a sales representative of the Minnesota Mining and Manufacturing Co. in the Kansas City and St. Louis areas. During World War II he was an Air Force pilot.

In his new position Smith is in charge of Bucyrus-Erie's publicity, advertising, publications, sales literature and other sales aids. He succeeds Frank T. House who was recently appointed to the newly created position of Sales Services Manager, in charge of field service, parts sales, dragline bucket sales, claims and sales promotion.

Prominent Florida Contractor Dies

Drilling contractor J. P. Carroll of West Palm Beach, Fla., died Feb. 4. He was instrumental in the founding of the Florida Well Drillers Association and served for three years as its president.

FAIRBANKS MORSE scores a major BREAKTHROUGH!



NOW! Our new WATER PURITY SYSTEM makes every F-M dealer more than a pump salesman! Today, you're a water conditioning expert—and as such, your way is paved to GREATER SALES... GREATER PROFITS!

F-M PROMOTION PROGRAM with free kit makes you a water conditioning expert... boosts sales of water systems and pumps!

WATER ANALYSIS KIT—gives you a sure-fire, educational method of approaching and interesting prospects by actually analyzing their water samples (which they can bring to you).

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PUBLICITY KIT—gives you the photos, releases, newspaper ad mats and radio scripts to use in spreading the word that **you're the one** to see about water problems.

DISPLAYS—give you an eye-catching means of showing customers how the Fairbanks-Morse Water Purity System works.

As experts you'll be able to see more prospects . . . sell more Fairbanks-Morse Water Purity Systems . . . You'll be able to sell more Fairbanks-Morse pumps.

Your Fairbanks-Morse Field Representative has all the details . . . get in touch with him NOW!

Or write:

Now you can sell thousands of new customers . . . especially in crowded areas that make water unsafe or questionable. The Fairbanks-Morse Water Purity System makes it possible to use water . . . from any source . . . pond, cistern or stream!

Our new Water Purity System means that now you can sell a profit-making water system in any section . . . regardless of well conditions, and be confident of pure, clean water!

Fairbanks-Morse Water Purity Systems automatically chlorinate water. *Then* the water is filtered and completely dechlorinated. No taste or smell remains. Even eliminates sulphur or iron taste! The F-M Water Purity System works automatically . . . takes up no more space than a water heater. Comes in a variety of filter sizes for ½ to 4 gallons per minute of flow.

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☐ Nearest F-M Field Representative name

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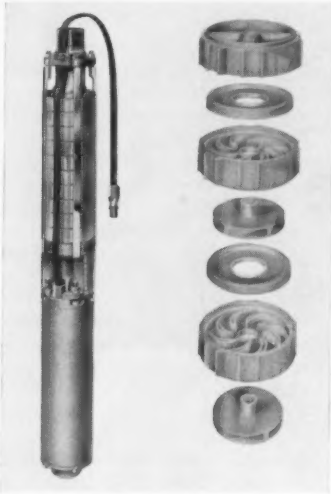
PRODUCT NEWS

Aermotor Introduces New Model "S" Submersible

Nine years of exhaustive research in design, material, serviceability and performance are reflected in Aermotor's new Model "S" submersible pump, according to Aermotor, Inc., Chicago, Ill.

Striving for improved performance of pump parts, Aermotor engineers chose DuPont's hard, tough "Delrin"



Aermotor "S" submersible pump and plastic components

for bearings and bowl-diffusers and Borg-Warner's high impact strength "Cycolac" for impellers. Tests in the field have proved the low moisture absorption and superb service under varying temperatures of these dependable plastic materials, the manufacturer announced.

The first submersible on the market with exterior pump parts made of durable plastic, the Model "S" reaches a maximum capacity of 1,900 gph and provides service to 600 feet. Available in 18 models, these pumps offer 7 through 31-stage design and horsepower ranges from ¼ through 5.

An ordinary screwdriver and an adjustable wrench are the only tools necessary to dismantle the entire pump. The bowl-diffusers and expertly machined discharge head are specially designed to be easily pried apart with a screwdriver. The 3-wire cable snaps directly into grooves in the highly resilient bowl-diffusers. The top of the cable is held in place by the metal nameplate.

For further information about these pumps write to Aermotor, Dept. TD, 2500 West Roosevelt Rd., Chicago 8, Ill.

Two New Medalist Tanks Are Unveiled

Two new water system pressure tank products were recently introduced to Medalist Tank Division representatives at the company's national sales conference in Chicago.

The Medalist Representatives saw the unveiling of a squat-vertical Perma Pressure unit designed for use in place of a horizontal tank, and an underground discharge Perma Pres-

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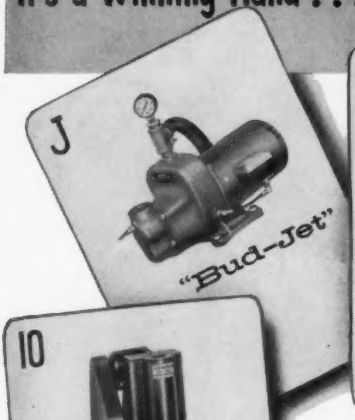
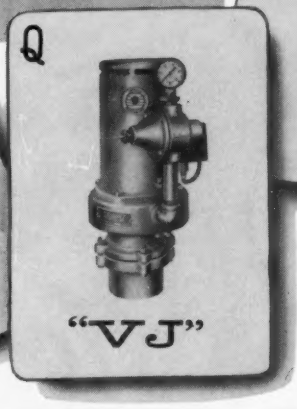
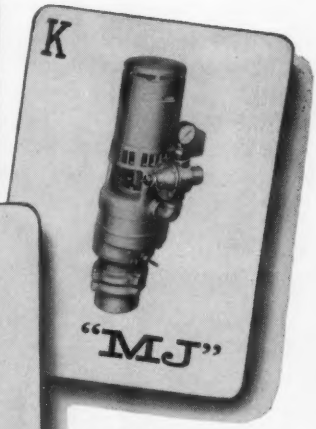
WHEN YOU BET ON AERMOTOR

It's a Winning Hand . . . Every Time!







123

KING

King of the Jets . . . the 'MJ' Multi-Stage has power to spare. Example? The 3-stage unit delivers 350 GPH operating on a vertical lift of 100 feet against a tank pressure of 80 pounds.

JACK

Jack of all Trades . . . the "Bud-Jet." Capacities to 1075 GPH. Depths to 90 feet. For shallow or deep well operation. Gives "big pump" service at "little pump" prices.

QUEEN

More versatile than a Queen Bee . . . that's the 'VJ' Vertical Jet. Tough installation jobs become a "soft-touch." Depths from 0 to 100 feet. Capacities to 1600 GPH.

TEN

Ten will get you Twenty you can't install a more faithful performer. The Aermotor Deep Well working head features compact design, adjustable stroke, powerful U-Bar construction.

ACE

Your Ace in the Hole . . . the Aermotor Submersible. ⅓ through 2 HP. Depths from 50 to 500 feet. Capacities to 1200 GPH. For 4-inch or larger wells. Has waterproof 3-wire cable.

AERMOTOR BRANCH OFFICES:

AMARILLO • CORDELE, GA. • DALLAS • DES MOINES
HARRISBURG • KANSAS CITY • MINNEAPOLIS • OMAHA

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CHECK YOUR CHOICE OF FREE BOOKLETS

- ☐ "MJ" Multi-Stage Jet
- ☐ "VJ" Vertical Jet
- ☐ "Bud-Jet"
- ☐ Deep Well
- ☐ Submersible

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Please send the FREE Booklets checked at left.

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Address_____

City_____ Zone____ State_____

sure unit. Both are equipped with built-in, free floating air seal which restricts the absorption of the air cushion in a pressure tank, eliminates the need for mechanical air volume controls, and ends unexpected water-logging failures.

The underground discharge unit is equipped with "universal" casing

Medalist tanks unveiled

clamps which permit firm attachment of the tank to the well casing in an underground installation.

The new products were introduced together with a new "package of merchandising programs" designed to assist wholesale distributors in promotion of the company's products.

For more information write Medalist Tank Div., Dept. TD, Metal Coating Corp., 1217 W. 37th St., Chicago 9, Ill.

Baker Has New Line Of Pressure Tanks

A new line of buried pressure tanks for water systems has been introduced by the Baker Manufacturing Co., Evansville, Wis.

The tanks feature hot-dipped galvanized construction to assure heavy corrosion resistant coating, inside and out. They are specially designed for use with a float, the Monitor AirSaver, for air volume control.

Any type of pump may be used with a buried tank, however, submersible installations are especially well suited because the complete water system can then be underground. Many times, installing a buried tank can simplify the piping and reduce the overall water system cost, the manufacturer noted.

For more information on the new product line, write Baker Mfg. Co., Dept. TD, Evansville, Wis.

Rapidayton Nomad Pumps Are Powered by Gasoline

Portable engine-driven centrifugal pumps in 1½-in. and 2-in. sizes have been added to the Rapidayton line of the Tait Manufacturing Co.

Known as Rapidayton Nomads, these self-priming pumps are made of a special aluminum alloy which combines light weight with strength and abrasion resistance, the company an-

Rapidayton Nomad

nounced. A hand grip makes the unit easy to carry. Weights are 42 and 44 lbs.

Powered by deluxe 4-cycle air-cooled Briggs and Stratton engines with recoil starters, the Rapidayton Nomads are equipped with a 2-hp

(Continued on page 60)

When it comes to

PUMPS

nothing matches... Jacuzzi

the world's finest

SUBMERSIBLE PUMPS

4-INCH SUBMERSIBLES

The most dependable service record of any submersible pump ever built — that's what dealers claim for Jacuzzi submersibles. Why? Superior design, quality construction, liberal use of bronze wherever wear may occur. Horsepower ratings from ½ to 5 hp. Heads to 800 feet. Capacities to 100 gpm.

SUBMERSIBLE TURBINES

For municipal water supply, for city in-line booster service, for irrigation or industrial applications, Jacuzzi submersible turbines for 6-inch, 8-inch or larger diameter wells are very BIG on performance. Horsepower ratings from 3 to 40 hp. Heads to 1000 feet. Capacities to 400 gpm.

TOP QUALITY MATERIALS

Jacuzzi uses only the finest materials available to make pumps — close grain cast iron, stainless steel and enduring bronze. Then, it's what Jacuzzi skilled craftsmen do to those materials that has built such a reputation for performance!

HIGHEST EFFICIENCY

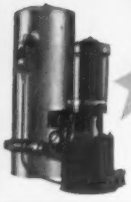
At Jacuzzi, special research and development laboratory facilities maintain constant check on every submersible pump. Automatic duplicating machines eliminate possibility of human error. Absolute uniformity of parts assures proper alignment, freedom from vibration, and long-life efficiency.

OUTSTANDING SERVICE

Factories and factory branch offices located throughout the United States provide the kind of service dealers want. Representatives are close at hand. Deliveries can frequently be made overnight. And, Jacuzzi Submersibles are backed by warranty plus a ten-year exchange plan.

SHALLOW WELL

STAR line
BEST JET YET!
Jacuzzi
DEEPRIME JET
Self-priming
DEEP WELL JET PUMP
Best jet yet is the Series JD—Jacuzzi Deeprime Jet, multi-stage self-priming deep well pump.
The Deeprime Jet actually seems to think . . . it is so completely automatic and foolproof in operation. If there's water in the well to be pumped, the Deeprime Jet will get it . . . all of it. If the water level gets pumped down, the Deeprime Jet will cut itself off and wait.
The pump won't clog or wear excessively like other types of pumps if pumping sandy water . . . won't lose prime if pumping gaseous water.
The Deeprime Jet is a dealer's dream pump. Once installed, there'll be no costly call-backs to eat up profit. And the cost . . . just peanuts more than an ordinary pump.

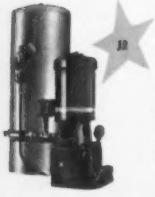


DEEP WELL PUMP

The Series JS is a Selective Stage pump, recognized for many years as the world's finest for extra deep wells or for higher water pressures. Unlike conventional multi-stage pumps, the Selective Stage pump can discharge water into the tank at either high, moderate or low pressure as desired. No expensive special tank required.

SHALLOW WELL PUMP

The Series JX Multi-Prime is the high pressure, higher capacity pump for jet age living. As the name implies, the Series JX Multi-Prime is a self-priming, multi-stage pump. The Multi-Prime is a shallow well jet pump with the jet built into the pump case. The check valve, too, is built into the pump itself, at the surface, and nothing is required in the well but a length of suction pipe.



DEEP WELL PUMP

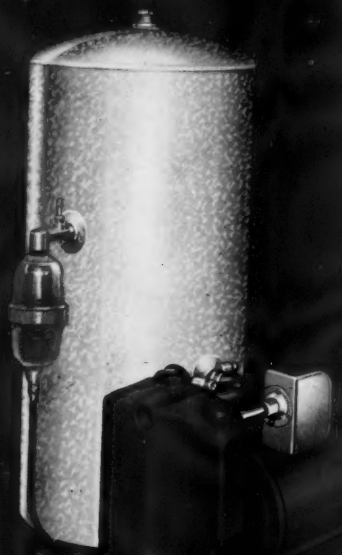
The completely new Series JR is designed for folks desiring the advantages of a quality multi-stage pump without having to pay a premium price. The Series JR is capable of providing increased capacities at greater-than-average pressures yet is comparable in price to ordinary single stage jet pumps. A wide range of horsepower ratings and capacities are available.

SHALLOW WELL PUMP

The STAR Line Series JY is a vertical centrifugal pump designed to boost the water pressure beyond that obtainable with ordinary pumps. While the Series JY is a multi-stage pump, the price is comparable to that of many single stage pumps. It is easily installed on a shallow well, cistern, lake or used as a booster pump to increase the pressure from a storage or overhead tank.

Jacuzzi

PUMPS AND WATER SYSTEMS



the top-selling Series RP

For the user desiring a modestly priced water system without sacrificing quality and dependability, Jacuzzi has specially designed the Series RP — double duty units that are self-priming on shallow wells or performing with great efficiency on deep wells. Series RP pumps are the top selling pump in the nation today! The reasons are simple: top quality materials assure long service life; Series RP water systems are complete with all the needed parts (no costly extras to buy); and the name JACUZZI on it is a badge of superiority you can point out to customers with justifiable pride.

SHALLOW WELL SYSTEMS

PACKAGE WATER SYSTEM

WATER SYSTEM COMPONENTS

Jacuzzi Series RP units are available for installation on shallow wells as either a package system, complete and ready to connect to the water source, or as various component parts to make up a water system.
A shallow well kit is provided with units ordered for shallow well installation.

Shallow well kit includes a threaded plug, horizontal check valve, and a Jacuzzi shallow well injector.

DEEP WELL SYSTEMS

Series RP double duty pumps may be ordered for installation on deep wells or easily converted from shallow well to deep well use by use of the proper kit. On deep well installations to 60 feet, the Series RP with exclusive Syncro-Flow design does not require a control valve and no hand adjustment is needed. A manually set control valve is used for greater lifts to 120 feet. Deep well kits are available for either two pipe or single pipe installations.

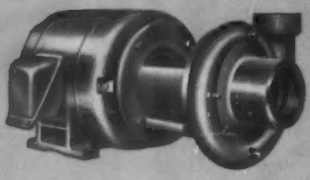
Parallel pipe kit includes bronze injector-foot valve assembly and a by-pass plug.

Single pipe kit includes bronze injector with packer-foot valve assembly, by-pass plug, adapter flange, and threaded coupling.

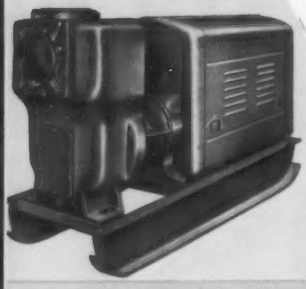
Jacuzzi TURBINE PUMPS

Package turbine pumps for low cost installation on 4 or 6 inch wells. Bigger deep well oil or water lubricated lineshaft turbines for irrigation, industrial applications or municipal water supply.

Jacuzzi CENTRIFUGAL PUMPS



Small centrifugal pumps for air conditioning applications or big, heavy duty pumps for sprinkler irrigation or industrial uses of all kinds. Engine driven centrifugal pumps, skid or trailer mounted, for portable service.

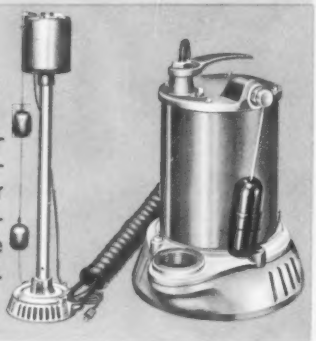


Jacuzzi CONTRACTORS' PUMPS

Self-priming portable pumps, AGC rated, either motor or engine driven, for de-watering use. Wide range of ratings to 200,000 gph. Choice of skid or trailer mount.

Jacuzzi SUMP PUMPS

Low cost basement drainers or industrial sump pumps. Popular submersible type basement drainer or conventional column type. No permanent installation required. Choice of all bronze or epoxy enamel finish.



JACUZZI BROS. INC.

Factories at
RICHMOND, CALIFORNIA
BERKELEY, CALIFORNIA
ST. LOUIS, MISSOURI
TORONTO, CANADA
MONTERREY, N.L., MEXICO
SAO PAULO, BRAZIL
Branch Offices in all Principal Cities

FOR MORE INFORMATION ON Jacuzzi PUMPS

phone, write or visit the Jacuzzi Bros. Inc. factory branch office nearest you.

ATLANTA, Ga.
690 Murphy Ave., SW, Bldg. B-6
Phone: PLaza 5-3589

BINGHAMTON, N. Y.
Upper Court Street
Phone: RAymond 3-6359

CHICAGO, Ill.
1644 Ogden Ave.
Downers Grove, Illinois
Phone: WOodland 9-6610

DALLAS, Tex.
Hwy. 183 & Loop 12, Irving, Texas
Phone: BLackburn 3-1167

DENVER, Colo.
5065 Colorado Blvd.
Phone: DUdley 8-4107

FRESNO, Cal.
1949 So. Van Ness Ave.
Phone: AMherst 8-6377

HACKENSACK, N. J.
301 Lodi Street
Phone: HUbbard 9-0300

HOUSTON, Tex.
2515 Texas Ave.
Phone: CApitol 2-9491

KANSAS CITY, Mo.
701 E. 12th Ave.
Phone: Victor 2-6462

LOS ANGELES, Cal.
2202 S. Atlantic Blvd.
Phone: ANgelus 1-8166

LOUISVILLE, Ky.
2114 So. 41st Street
Phone: SPring 2-3656

MINNEAPOLIS, Minn.
6160 Wayzata Blvd.
Phone: LIberty 5-5606

ORLANDO, Fla.
4732 So. Orange Blossom Tr.
Phone: GArden 5-9059

PHOENIX, Ariz.
508 E. Buckeye Rd.
Phone: 252-6175

PORTLAND, Ore.
9510 S. E. McLoughlin Blvd.
Phone: OLive 4-5451

RICHMOND, Cal.
5327 Jacuzzi Ave.
Phone: LAndscape 5-3400

RICHMOND, Va.
1506 Belleville St.
Phone: ELgin 5-6529

SACRAMENTO, Cal.
1650 East El Camino Ave.
Phone: WAbash 5-2785

ST. LOUIS, Mo.
4100 Bayless Ave.
Phone: HUdson 1-4400

STOCKTON, Cal.
1136 N. Broadway
Phone: HOward 4-9839

Other Factories in

BRAZIL: Sao Paulo
Jacuzzi-Universal do Brasil
Caixa Postal No. 400
Estado de Sao Paulo, Brasil, S. A.
Phone:
Sao Bernardo do Campo 42-7073

CANADA: Toronto, Ontario
Jacuzzi Universal (Canada) Ltd.
Rexdale, Ontario, Canada
Phone: Cherry 6-7104
(Branches in principal cities)

MEXICO: Monterrey, N. L.
Jacuzzi-Universal, S. A.
Apartado Postal 1537
Monterrey, N. L., Mexico
Phone: 6-30-00
(Branches in principal cities)

BITS from the wit sharpener

A socially ambitious young woman made her husband's life miserable trying to get him to rent a more expensive apartment. One evening he came home in a good humor. "Good news, dearest," he cried. "We don't have to move. The landlord just raised the rent."

Jones: "I don't see why you haggle so over the price with the tailor about that suit; you'll never pay him anyhow."

Jakes: "But I'm conscientious; I don't want the poor fellow to lose any more than necessary."

Dottie, age six and Frankie, age five, dressed up one afternoon in their parents' clothes, walked several blocks down the street and rang the bell at a strange house. To the lady who opened the door, Dottie announced, "We are Mr. and Mrs. Jones and we have come to call."

They were graciously invited in. After ten minutes of very grown-up conversation, their hostess asked, "Mr. and Mrs. Jones, wouldn't you like some lemonade and cookies?"

Mr. and Mrs. Jones would, so the hostess went to the kitchen. When she returned, her guests were gone. Stepping to her front door, she saw them hurrying down the walk. "Aren't you going to stay for refreshments?" she called after them.

"We're sorry but we can't, Dottie called back. "Mr. Jones just wet his pants."

The boat captain peered into the fog and suddenly saw a man leaning on a rail just a few yards away.

"Where do you think you're going?" the captain shouted. "I've got the right of way."

"Maybe so," called back the man, "but this ain't a ship. This happens to be a lighthouse."

"Mommy, Mommy," bawled the little girl, "Daddy just poisoned my kitty."

"Don't cry, dear," replied the mother sympathetically. "Maybe he had to."

"No, he didn't," screamed the heartbroken child. "He promised me I could."

"I certainly hope it doesn't rain today," one lady kangaroo remarked to another. "I just hate it when the children have to play inside."

"All he wants is a teensy drink of water!"

With General Electric's two-wire submersible pump motor, you get more than sufficient starting torque for the average pump as the performance curves (above) show.

GENERAL ELECTRIC'S TWO-WIRE SUBMERSIBLE PUMP MOTORS . . .

The motors you can install with confidence

"Install and forget them" . . . that is the kind of confidence you receive, through dependability and performance, with General Electric's oil-filled submersible motors for water pumps. These two-wire motors, available in ratings from ⅓ to 1½ hp, have advantages which make them your customer's best submersible pump motor buy.

FOR EXAMPLE:

Dependability. Submersible motors on test cycled over 700,000 times without noticeable loss of oil or any entry of water, demonstrating long-life dependability.

Performance. Because the electrical design of the G-E two-wire submersible pump motor includes a built-in running capacitor, your customers get quieter operation and improved performance. There are no outside controls, and the two-wire design eliminates chances for error or confusion during hook-up . . . saving installation time.

Whether you build, sell, or install submersible pumps, specify General Electric submersible pump motors . . . the motors you can install with confidence in their dependability and performance.

Three-wire motors and submersible motor parts are also part of General Electric's complete line. For more information, contact your nearby General Electric Sales Office, or write for Bulletin GEA-6996, Section 724-12, General Electric Co., Schenectady, New York.

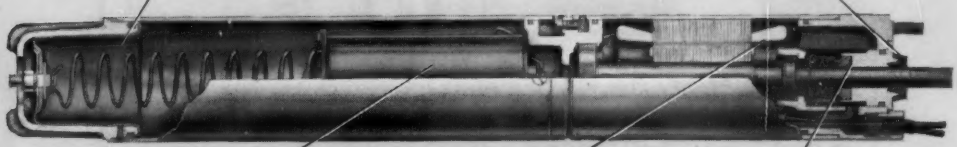
Progress Is Our Most Important Product

GENERAL ELECTRIC

Flexible neoprene reservoir and steel spring maintain pressure on oil to prevent entry of water.

Special moisture resistant construction protects components against aging and electrical stresses.

Rotating sand slinger keeps away foreign particles. Shaft and through-bolts meet NEMA standard pump dimensions.



Long-lasting Pyranol* capacitor permits two-wire connection . . . makes installation easy and reduces service call-backs.

***Reg. Trademark of General Electric Co.**

Windings are triple dipped-and-baked in varnish for extra protection against moisture and electrical stresses.

Rotating seal keeps water out and prevents oil leakage. Entire seal unit is pressure-tested at factory.

PRODUCTS . . .

(Continued from page 52)

motor in the 1½-in. size and with a 3-hp motor in the 2-in. model.

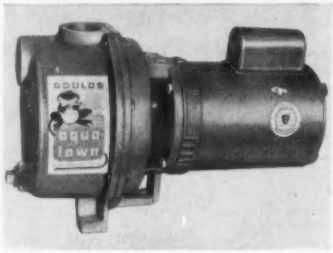
Total head for each model exceeds 90 feet with capacities ranging beyond 5,000 gph for the smaller size and more than 7,200 gph for the larger units. Both pumps are built to handle water with a high percentage of solids without clogging.

For more data on the Nomad pumps write Tait Mfg. Co., Dept. TD, 500 Webster St., Dayton, Ohio.

Three Pumps Added To Aqua-Lawn Line

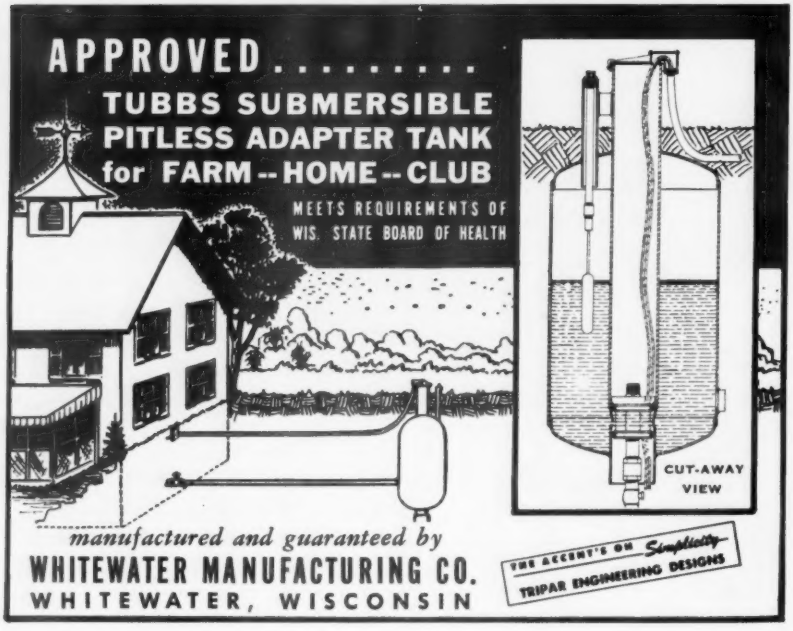
Three new pumps have been added to the line of Aqua-Lawn sprinkling pumps manufactured by Goulds Pumps, Inc. Designated as Series XSL and built in 1, 1½ and 2-hp sizes, these units provide capacities up to 4,320 gph.

Goulds Aqua-Lawn pumps are designed especially for the hard continuous service demanded of sprinkler



Goulds Aqua-Lawn pump

pumps. Features include positive, fast priming; self-purging, will not vapor lock; high efficiency, no recirculation after priming completed; no foot or check valve required.



For additional information write Goulds Pumps, Inc., Dept. TD, 221 Black Brook Rd., Seneca Falls, N. Y.

Red Jacket Tells Time Payment Plan

"Sell them Water Systems now — they can pay later" is the theme of a new time payment plan offered by Red Jacket Manufacturing Co., Davenport, Iowa. The simple, non-recourse payment plan, in an experimental stage since last June, is offered to all Red Jacket dealers. It is administrated by Allied Building Credits, Inc., (ABC) of Los Angeles.

According to a Red Jacket announcement, the plan offers these advantages to dealers: eliminates collection problems, frees dealers' working capital, simple to use, fast, and no recourse. ABC often issues credit clearances in hours and seldom more than a day or two depending on location of dealer and customer, Red Jacket declared. In addition to the pump and well, the plan allows dealers to sell bigger packages and better quality products because it covers all the plumbing and building product lines they handle.

Under the terms of the plan the customer has up to 36 months to pay, and in many cases no down payment is required.

In some instances, for larger installations costing as much as $3,500, the customer has up to 60 months to pay.

In some cases, payments can be as low as $10 a month.

Complete details about the Red Jacket Payment Plan are available from Red Jacket Mfg. Co., Dept. TD, Davenport, Iowa.

Just look what the JENSEN 11-W will do...

Jensen Model 11-W
Smallest of 17 sizes

...with a 1/6 h.p. motor!

CYL. I.D.	DROP PIPE SIZE	GALS. PER HOUR	1/6 H.P. MOTOR	
			20-40 PRESS.	OPEN DISC.
1⅛"	1¼"	65	145'	215'
1⅜"	1½"	97	120'	190'
2"	2½"	205	50'	120'
2⅜"	2½"	290	20'	90'

Your customers will be glad to know even this smallest JENSEN WATER SYSTEM *pumps more for less!* It attaches directly to drop pipe, is self priming. PLUS other important features. Write for attractive dealer discounts and catalog of all 17 JENSEN sizes—fill out and mail coupon today.

JENSEN
Automatic
WATER SYSTEMS

JENSEN BROS. MFG. CO., INC.
Box 477-DA, Coffeyville, Kansas

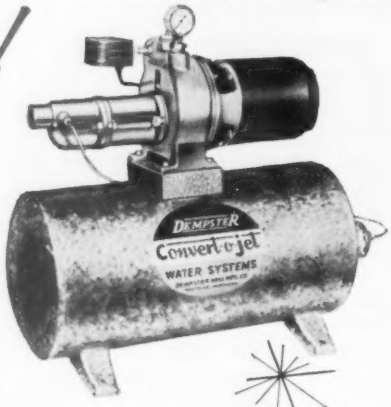
Please send me your complete catalog and special water well contractor price list.

Name _____

Address _____

City _____ State _____

Convertible Water Systems for Every Capacity, Pressure, Depth *and Price!*



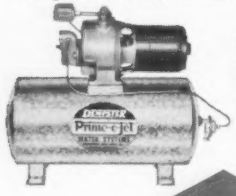
DEMPSTER

Convert-o-jet

DEMPSTER Convert-o-jet water systems are more profitable to sell, easier to install, and their high quality of construction and performance are a guarantee that they'll stay on the job, without complaints.

You can offer your customers a complete range of these better Dempster convertible water systems to suit every practical capacity, depth, pressure requirement and budget . . . ⅓, ½, ¾ and 1 HP motors—plus the extra power and performance of the Dual Convert-o-jet with ½ HP motor and unique back-to-back impeller.

Dempster Convert-o-jets have quality features you'll find in no other convertible pumps —features that mean longer life and easier installation and conversion from shallow-well to deep well operation. All models available with either parallel or inner pipe systems.



DEMPSTER PRIME-O-JET is the thrifty quality shallow well system. Self-priming (after case is initially filled). Maximum suction lift 25 ft. Delivers up to 1010 gals. per hour. Available with either ⅓ or ½ HP horizontal jet-type motor and with pressure tanks (from 13 to 42 gals.) or matched-flow system with a mounted 4 gal. tank.

Write for Full Details Today!

DEMPSTER

DEMPSTER MILL MFG. CO.

Home Office and Factory:
Beatrice, Neb.

Branches: Kansas City, Mo. / Denver, Colo. / San Antonio, Texas / Sioux Falls, S.D. / Oklahoma City, Okla. / Des Moines, Iowa / Omaha, Neb. / Amarillo, Texas

LITERATURE RACK

'Weldirectory' Issued

Information on the Lincoln line of arc welding products is contained in the new Lincoln Electric Co. bulletin entitled "Weldirectory of Arc Welding Electrodes, Equipment, and Supplies."

The bulletin presents information on AWS electrode classification and discusses correct electrode selection for every type of welding application. Arc characteristics, welding procedures, and physical properties are listed for each electrode. The Bulletin supplies descriptive information on the performance and construction features of Lincoln's full line of arc welders, and welding supplies.

Write Lincoln Electric Co., Dept. TD, Cleveland 17, Ohio, and ask for bulletin 7000.7.

Barnes Dealer Program

Described in a new "Water Wizard Portfolio" is a new program designed to increase Barnes dealers' share of the rural and suburban replacement market. The program is based on specialized training of Barnes dealers and the added benefit of a pump and well inspection service to be offered free to water system owners during 1961.

Barnes dealers will work closer with their customers and health authorities on water purity tests as a part of the new Water Wizard program. The Water Wizard portfolio also contains a variety of merchandising aids for wholesaler and dealer use. Barnes' new Water Wizard Sales Plan is being extensively promoted through national and regional trade publications, direct mail and point-of-sale. Literature on the Water Wizard program is available free from Barnes Mfg. Co., Dept. TD, Mansfield, Ohio.

Peerless Bearing Bulletin

Selection and application of ball bearings used in centrifugal pumps is the subject of a new technical bulletin issued by Peerless Pump. Citing problems of axial and radial thrust, the bulletin discusses the various types of bearings available for use. Deep groove, maximum capacity, and angular contact thrust bearings are evaluated in detail. An analysis of the single row versus the double row bearing is made with the advantages and shortcomings of each pointed out.

Copies of this bulletin may be obtained from Peerless Pump, Dept. TD, Hydrodynamics Div., Food Machinery and Chemical Corp., 301 W. Avenue 26, Los Angeles 31, Cal. Ask for technical information bulletin No. 6.

Customer Saver Plan

Baker Manufacturing Co. announced a new brochure describing a service plan for dealers who install floats for air volume control in pressure tanks.

To maintain top pressure tank effi-

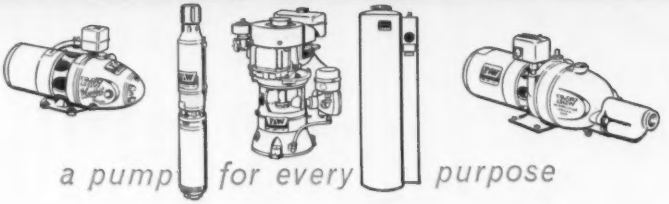
If you are experienced in the water systems business, your volume could be nearly double that of 1956. If it is not, *take a long look at your sales methods.* Compare them with the hard-hitting program of the **FLINT AND WALLING** dealer. He doesn't have to cook up his own promotions. They are handed to him in a neat, easy-to-use package. This planned promotion, plus a *complete line* of pumps, tanks and water conditioners properly engineered and competitively priced, and the backing of a penetrating national advertising program, add up to the **FLINT AND WALLING "PROFIT PACKAGE!"** May we call and tell you all about it? Write us today!

Sales methods get outdated, too!

sell the
profit
package
by

FLINT AND WALLING

KENDALLVILLE, INDIANA



a pump for every purpose

ciency, tanks must be charged with air every 12 to 18 months. This periodic charging of the tank is the basis for the Customer Saver Plan. The plan includes the routine inspection and servicing of the customer's complete water system, including the pump. It is flexible to allow dealers to schedule visits to their own advantage in both location and time.

The brochure describes how to set up the plan, includes layouts of sample cards and outlines the advantages of the plan to both dealers and customers. For a copy of the plan write Baker Mfg. Co., Dept. TD, Evansville, Wis., and ask for publication ADV-1700.

Texas Agencies Listed

"Directory of Water and Sanitation Agencies in Texas 1960," published by the Texas Water and Sanitation Research Foundation, is a 52-page directory of state and federal executive and legislative agencies, the water control and improvement districts, soil conservation districts, scientific societies and other associations and groups. Each listing contains a mailing address and the name of at least one individual officer. Not included are municipal water departments and water supply companies.

The directory may be purchased (price $2.50) from the foundation's executive secretary, Dr. Louis Koenig, 6702 Blanco Rd., San Antonio, Tex.

Describes Pump Line

A new 4-page condensed bulletin illustrates and describes the Aurora centrifugal and Apco turbine type pumps including single and multiple stage, horizontal and vertical models. Included are brief descriptions, typical applications, capacity and head range for each type of pump. Design features include: vertical mountings for minimized space requirements, dynamic and hydraulic balance, Mono-vane single passage impellers for non-clog applications, and centerline discharge for self-venting. Capacities range from 1 to 9,000 gpm and heads to 600 feet.

For further information write Aurora Pump Div., New York Air Brake Co., Dept. TD, Aurora, Ill.

Layne Fire Pumps

Layne fire pumps are the subject of a new 6-page bulletin that shows cross section drawings, typical installations, size and capacity charts. Both oil and water lubricated types are shown complete with accessories to meet the Factory Mutual and Underwriters' Laboratories requirements.

Copies are available from Layne & Bowler, Inc., Dept. TD, Memphis 8, Tenn. Ask for bulletin No. 401.

"Hold it! That's the shoestring we started this business on."

CALENDAR

May 25-26, 1961 — Michigan Well Drillers Association, Inc., Annual Convention, Hayes Hotel, Jackson Mich.

June 7-8, 1961 — Ontario Water Well Association, Annual Convention, Prudhomme's Garden Centre Motor Hotel, Vineland, Ont.

June 13-15, 1961 — Montana Water Well Drillers Association Annual Convention, Chamber of Commerce Building, Billings, Mont.

June 21-22, 1961 — Midwestern Well Drillers Exposition (sponsored jointly by the Iowa Water Well Association and the Illinois Water Well Drillers Association, Inc.), Hotel Blackhawk, Davenport, Iowa.

June 25-28, 1961 — Idaho Drillers Association, Inc., Annual Convention, Sun Valley, Idaho.

July 20-22, 1961—Washington State Well Drillers Association, Annual Convention, Morck Hotel, Aberdeen, Wash.

Aug. 10-12, 1961 — South Atlantic Well Drillers Jubilee, Carolina Beach, N. C.

Aug. 10-13, 1961 — Texas Water Well Drilling Contractors Association, Annual Convention, Cortez Hotel, El Paso, Tex.

Nov. 3-4, 1961 — Oregon Drilling Association, Inc., Annual Meeting, Multnomah Hotel Portland Ore.

Nov. 26-Dec. 2, 1961 — National Water Well Exposition, Deauville Hotel, Miami Beach, Fla.

SELL

the complete line
the dependable line

U.S. PUMPS

- **Vertical Turbine**
- **Axial Turbine**
- **Submersible**
- ***and the new***

IN-LINE SUBMERSIBLES
both horizontal & vertical

PLUS

- **prompt deliveries**
- **intelligent factory service**
- **regard for YOUR profit**

For complete information write, wire or phone

U.S. PUMPS

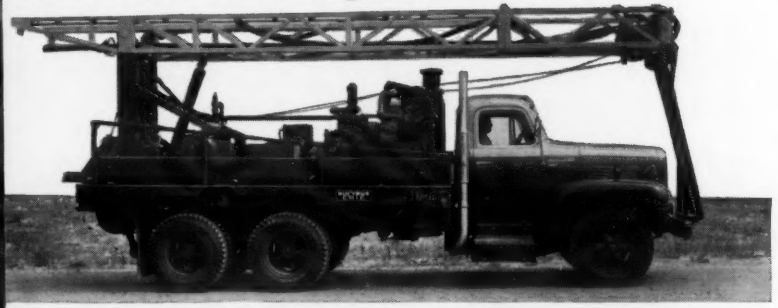
2324 E. 49th St., Los Angeles 58, Cal.
LUdlow 7-5113

YOU DRILL

...you water fast—*rotary* fast

You drill at speeds up to 250 rpm. Your rotary table has four forward speeds and one reverse. You have double-drum draw works with individual friction clutches to all main machinery. And you exert precisely the right down pressure through a dual-range hydraulic system that operates a continuous-type chain feed pull-down.

. . . you 'N RUN WITH THE NEW to that extra job



You break tool joints with a self-adjusting, built-in breakout wrench . . . stack pipe in the handy pipe rack . . . lower the mast hydraulically and cruise at highway speeds to the next job . . . the one you could never have fitted in with the old rig.

Let your Bucyrus-Erie distributor show you how you can bring in profits fast — rotary fast — with the new 10-R rotary drill. Bucyrus-Erie Co., South Milwaukee, Wisconsin.

BUCYRUS-ERIE 10-R

. . . most respected name in the field

11W60

BARGAIN COUNTER

Rates for ads in this section $1 per line per month; minimum charge $4 per month; cash required with order; no discounts, no commissions. **Lines:** 28 characters make 1 line; count each letter, digit, space and punctuation mark as 1 character; divide 28 into total number of characters to get number of lines; add $1 for each fraction of line; add 2 additional lines for box number and publication address in blind ads (not recommended). Closing date: 5th of previous month for both copy and payment.

DRILLS FOR SALE

Stone 31, used, mounted Ford truck, complete string 6" tools, priced to sell. Gill Bit Sharpening Co., Inc., P. O. Box 2375, Spartanburg, South Carolina.

Bucyrus-Erie 20-W, on 1½-ton Chev., drilling tools, fishing tools and cables, machine and truck in A-1 condition; Casey Szydlowski, 7570 S. Howell Ave., Milwaukee, Wis., Phone: SO 2-5070.

28-L EB mount, trailer mounting, (#98020) new Feb. 1954, with Cummins diesel engine, tool crane, rotary blower.

28-L EB mount, trailer mounting, (#112740) equipped with Cat diesel, tool crane, line tension clamp, cable spool drive, rotary blower.

These machines are priced to sell, f.o.b. Tillsonburg. Tillsonburg Pipe and Supply, Tillsonburg, Ont., Canada. VI 2-3651.

Gus Pech boring machine, 1953 model, on 1950 2-ton Ford, C.O.E. truck with rebuilt engine, 90' rod, 20" and 24" bucket, bailer and tile setter.

Speed Star 71 mounted on Reo truck, priced to sell. Gill Bit Sharpening Co., Inc., P.O. Box 2375, Spartanburg, S. C.

Stardrill Keystone 71, 1955 model, casing reel, catheads, blower, string of 6" tools and wrenches. Mounted on K-11 Int. truck. $5,450 or best offer. The Hagmann Co., 140 Park St., Vienna, Va. WE 8-2400 days, TW 3-7114 nights.

Small Sullivan rotary drill complete with drill rods, bits and adapters mounted on good '48 Ford truck. $3,000 complete. Sam Ellsworth, Rt. 1, Morral, Ohio, IN 5-2288.

B-E 20-W, 1954, with new Hercules eng. mounted '44 Studebaker Army 6 x 6 truck, owner-operated outfit, drill and sand lines, complete string 4" and 5" tools, some fishing tools and misc. items, priced to sell. Located near Elgin, Ill. Contact Kirk's Well Drilling, 8 South Oltendorf Road, Streamwood, Ill. ATwater 9-1565.

Wex-Tex, approx. 4,000-ft. spudder-rotary comb., 6-cyl. Buda on butane, stems 8-18 tools. (Not rotary tools), $3,500 or trade for airplane or small rotary. Bill Block, 500 W. 22nd St., Plainview, Texas, CA 4-9227.

Speed Star 71, semi mounted, '48 Chev. 2-ton truck, 2 strings tools 4 to 6 in., cathead and casing reel, 900 ft. ⅝ cable, 900 ft. ⅜ sand line. Allen Edwards, McKenzie, No. Dakota.

Sullivan 37 rotary well machine with drill pipe. On K-7 IHC truck. Wm. Main, Thunder Hawk, So. Dak.

Rotary rig, chain pull down, complete $3,500.

Failing 1500 complete with or without percussion hammer, pumps, compressors 2⅜" to 4½" drill pipe. Fred Butler, Box 481, Pueblo, Colo.

Bucyrus-Erie 21-W, in excellent condition, mounted on V-8 Ford truck, 5' tool guide, very good for starting on bed rock or blast holes, ¾" cable, will sacrifice.

Keystone 50, practically new Continental 6-cyl. motor, rig mounted on Rio truck, machine and truck in excellent condition, working every day.

Both machines welded to frame. Catwalks and fenders. Machines look neat and are ready to work. Call James Stoutenburgh, Glenford, N.Y. OL 7-2261.

Winter-Weiss Portadrill reverse rotary, 6 years old, good condition, also 1 C.P. model 8 diamond drill, screw feed, some N X drill rod and casing. Priced to sell. Western Drilling & Equip. Co., 1545 Bay St., Tacoma 2, Wash. Phone FU 3-2409.

22-W (#113492) mounted on 1951 Chev. truck.

20-W (#78048) mounted on 1941 Int. truck. Hickory Well Supply Co., Inc.; P.O. Box 602, Hickory, N.C. DI 5-4125.

Cyclone, model 42, good condition, casing line, sand line, drill line, wrenches, jacks, chain bar, bailer, drill bar, rope socket, $2,500. S. & S. Drilling Co., Eastford, Conn.

Portadrill 502, 1957, with 5 x 8 mud pump, on 1957 F-800 Ford, with 800 ft. of drill pipe. Milan Freese, Inc., R.R. #1, Marion, Iowa, Phone DR 7-3445.

Att'n: QUARRIES, ETC. (5) Bucyrus-Erie electric well drillers, model 42-T caterpillar type, Ser. No's 41-400 series, powered by 40-hp variable speed reversing motor, telescoping derrick to 47' 6", 4" to 12" pipe capacity, equipped to drill 9" dia., complete with reels, hoists, etc., good condition and maintenance, last used six months ago, many spare parts, adjustable strokes 31" to 46", photos available, inspection invited, offered subject prior sale under $5,000 each. Abe Cooper-Watertown Corp., Attn: Gilbert Matlow, Watertown, N.Y., SU 8-5500.

Star 55, 1955 model on '50 Chev. 1½-ton truck, casing reel, catheads, power derrick. $3,200. Badger Well Drilling, 6125 W. Fond du Lac, Milwaukee 18, Wis. HO 6-6290.

Gus Pech boring machine and Ford truck, excellent condition. H. H. Shaw, 114 Jackson Rd., Hopewell, Va.

22-W, diesel powered on KB-5 I.H., tool guide, blower, rubber sheaves, casing reel, cables, catheads, tools.

Factory trailer mounted Star 71 U-4 I.H. powered, tool guide, casing reel catheads, lines and tools. P. Jacobson, Port Credit Ont., Canada, Phone CR 8-4724.

DRILLS FOR SALE

Bucyrus-Erie 21-W drill, on Army 6 x 6 GMC, tools to drill 6" & 8" wells, machine in good shape, good sand line & drilling cable, priced to sell. Max Seitz, 3 Dorsett Dr., Trenton, N.J. TU 2-2830.

Jetting rig, on late model GMC 1-ton truck, two 4 x 6 single acting Howell jetting pumps, 26' tubular derrick, all chain drive with left and right cathead, independent engine with clutch. $1,750.

21-W (#58868) on 1950 GMC, equipped with Willys jeep engine, power derrick hoist, catheads, 36' one-piece derrick, truck and rig in good overall condition, approx. 400' ½" and ⅜" cable, no tools. $2,350.

22-W (#47050) on K7 Int., U-164 Int. engine, casing reel, catheads, 36' derrick with power hoist, machine completely rebuilt 1959, cable on all reels, no tools. $4,500.

Howell 60 band wheel rig, on 1946 Chevy, power derrick hoist with 21-W steel derrick, approx. 200' ⅝ & ⅜ cable, righthand cathead, four-cyl. Red Seal engine. $1,300.

Armstrong 33-W on 1947 Ford, 1947 Ford engine in rig, 36' derrick with new style folding braces and power derrick hoist, complete electric starting, good tires, approx. 500' ⅝ & ⅜ cable. Complete set of 2 x 3 tools, socket, jars, pipe tongs, guylines and stakes, catwalks and weather tight tool box. $3,200.

Star 55, 1955 model, on Studebaker 1½ ton truck, new model B-125 A-C engine four-cylinder OHV, casing reel, catwalks & lefthand cathead, telescoping 32' derrick with power derrick hoist, approx. 500' ⅝ & ⅜ cable, new paint, good tires. $3,500.

1951 Ford water truck with 800-gal. vacuum fill tank, P.T.O. operated winch with cable. $1,200.

Ford model "F" industrial engine, six-cyl., OHV, 223-cu. in. displacement, 86 continuous hp, 2,800 rpm, starter and generator, PTO clutch and four-speed transmission, 22" wide x 5'6" long 42" high. Run only 80 hours. New price (engine only) $1,543, now $1,050.

Used drill pipe, 2⅜" x 20' four thread N-rod, excellent condition. Per foot, $1.50.

14" single sheave rope blocks with shackle, bronze-bushed & Zerk fitted, ea. $40.

All prices F.O.B. Minneapolis. R. R. Howell Co., 31st Ave. & 4th St., S.E., Minneapolis 14, Minn. FE 1-1301.

DRILLS FOR SALE

Bucyrus-Erie 24-W (#25453) 40-ft. derrick (less power winch), casing reel, cathead and cable, Buda gasoline engine P205 (#249875), semi-trailer mounted, 10:00 x 20 tires, new paint, good condition, $2,800.

Star 71 (#8777) 40-ft. derrick (less power winch), Continental PF162 gasoline engine, solid spud arms, rubber shock absorber in derrick head, mounted 1950 2-ton GMC truck, good condition, $3,000.

Casing line parts for Star 71, new in original shipping crate, $800.

Miscellaneous repair parts for Star 71, $1,000.

Miscellaneous drilling tools, 6-in. through 14-in., description and price list on request. Sydnor Pump & Well Company, Inc., P.O. Box 1476, Richmond, Virginia. Phone: MIlton 3-2725.

When answering ads, mention *The Driller.*

Keystone-Franks 30, 1,500 ft. capacity. Rotary, air & mud circulation, 250-ft. 4½" flush drill pipe, 6" Ingersoll-Rand down-the-hole hammer, subs, stabilizers, portable mud pit; trucks if desired, drill 2 yrs. old.

Air & mud rotary, Keystone-Franks 50J, 2,000-ft. capacity, complete 500' 4½" flush drill pipe, 6" Ingersoll-Rand hammer, subs, stabilizers, portable mud pit; trucks if desired. These rigs must be seen to be appreciated, COME AND INSPECT, SET YOUR PRICE, NO REASONABLE OFFER WILL BE REFUSED. Earl Fuchs, Midwest Drillers, Prairie du Sac, Wis. Phone 438.

Bucyrus-Erie 36-L spudder with or without tools, diesel engine, trailer mounted. Bruce Pierce, Box 386, Thermopolis, Wyo., UNion 4-3217.

Keystone 50-A with all tools, lines and truck, $1,800.

Bucyrus-Erie 20-W with all tools, lines and truck, $1,800.

Cyclone 42 with all tools, lines and truck, $1,800. Write The Driller, Box 804, South Milwaukee, Wis.

Failing model 1500 Special, diesel power, GD 5 x 8, tall derrick, accessory equipment. Bill Glenn, 1425 St. Paul St., Denver, Colo. Ph: EA 2-5324.

DRILLS FOR SALE

Cyclone 36, 1958 model well drill, on 1954 IHC K35 truck, 36' telescope mast, casing reel, no catheads, with cable, all in perfect shape, complete overhaul on rig engine, new paint job, good looking truck and drill, now working, asking $3,700. Larson-Becker Co., Batavia, Ill., TR 9-1316.

24-L, semi-trailer mount, 48-ft. derrick, excellent condition.

22-W (#114395), on K-7 Int.

22-W (#112133), on GMC.

22-Ws, 3 machines, all 36-ft. derrick models with casing reels, spooling devices. One truck mounted.

20-W (#101970) on Chev., rig completely overhauled.

23-P Bucyrus-Armstrong on Ford.

1-W, new condition, on Dodge truck.

Keystone 50 on KB-5 Int.

All used drills repaired, steam cleaned, and painted in our shop, Drillers Supply Co., P.O. Box 64, Joplin, Mo. MAyfair 4-0440.

Bucyrus-Erie 20-W (#78016), 1-piece mast, casing reel, spooling device, no catheads, all rebushed, A-C motor, all in top operating condition, with drill line and sand line, mounted on 1½-ton IHC truck, good running condition, asking $2,200. Larson-Becker Co., Batavia, Ill. TRemont 9-1316.

1958 model Bucyrus-Erie 1-W, with lines, complete rotary attachments, 140' of 2⅜" drill pipe, 3-stage Moyno mud pump with hoses and circulating tank, mounted GMC 6 x 4.

Bucyrus-Erie 21-W drills, two machines, with 32-ft. 1-piece derricks, Le Roi engines, both repainted and rebushed, no trucks.

Bucyrus-Erie 21-W with 32-ft. 1-piece derrick, Le Roi engine, with tools, on Diamond-T, rebushed and repainted.

Bucyrus-Erie 20-W, 1950, 32-ft. 1-section derrick, casing reel, and catheads, mounted 1951 Chev.

Cyclone 42, 1952, Continental engine, telescoping derrick, automatic feed, overhauled and repainted, no truck.

Bucyrus-Erie 28-L, 1952, trailer mounted, 6 MZA Waukesha engine, tool crane.

Bucyrus-Erie 36-L, 1945, 140 GK Waukesha engine, tool crane, casing line, 3-sheave casing block, casing hook and guy wires. The Buckeye Supply Co., Box 1231, Zanesville, Ohio.

DRILLS FOR SALE

Speed Star Keystone #55, '56 model, w/rotary on '52 Chev., 200-ft. stem, 4x3 centrifugal pump, 4-cyl. Continental eng., 3 up to 8" bits for rotary, 4 & 6" bits for spudder. Many more extra tools. For more information, write Angelo Antonini, Box 104, Groveland, Ill. or call Groveland, Fulton 1-7465 after 6:00 p.m.

To settle estate, Star 71 with tools, ready to drill, $2,500. Loomis rig, small, complete with tools, ready to drill, $1,500. Administrator, C. O. Belanger, R #1, Kankakee, Ill. Phone: 24887.

Bucyrus-Erie 22-W, '48, on Chev. truck.
Cyclone #44 OF, on Int. truck.
Bucyrus-Erie 22-W, '59, on '53 Ford. Many tools with rigs. Mrs. A. M. Huffaker, R. 2, Monticello, Ky.

Keystone 50, 1950 model, on '50 Chev., A-1 shape, all tools, $2,800. R. Black, R. D. #3, Kitt, Pa. LI 2-9248.

Loomis K-2 W, 1956 model, mounted on Chev. 4 x 4 complete line of tools and cable. A-1 shape. 36-ft. mast. H. K. Crabtree, 4456 St. Paris Pike, Springfield, Ohio, Phone: WO 4-1482.

20-W (#114939), mounted, with or without tools, excellent condition. Harvey Acker, Big Bend, Wis.

Reverse circulation rig, capacity 36-in. dia. holes to 300 ft., complete with bits, tools, and 160 ft. of 6-in. drill pipe, machine in good operating condition, mounted on F-800 Ford; phone or write Doug Holzem, 1975 Prairie Ave., Beloit, Wis. EMorson 2-3922.

EQUIPMENT WANTED

2—twenty ton Hi-lift jacks, casing collar with 6" slips and 6" slotted head. Write: The Driller, Box 806, South Milwaukee, Wis.

2—18 or 20" hole bits and other big tools. Carrol Johnson, 6 DCMR, Whitman AFB, Missouri.

Rotary rig with 1,500' capacity. State age, condition, tools and price. Must be in good condition. Trade or sell '49 1,500' Portadrill. Christensen Well Co., 2863 State St., Omaha, Neb.

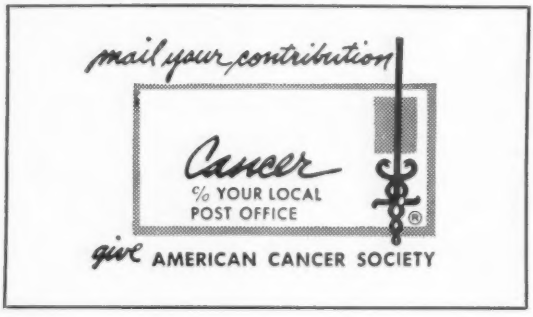
Don't forget to mention *The Driller* when answering these ads.

MISCELLANEOUS FOR SALE

Tools 4 to 16" and equipment. Write for listings. Prentice Drilling Co., 1400 E. Lincoln Hwy., DeKalb, Ill.

Drill stems, new, 20' long, 4¼" diameter, 3" pin. $175 ea. The Pump Center, Rt. 1, Box 488, Antioch, Calif.

Save money, mail us a complete list of tools you want to buy. State hole size, weight, length, joint size. Selling $65,000 good used drilling tools, sizes 4 to 20". Tri State Tool, Box 827, Parkersburg, West Virginia.



MISCELLANEOUS FOR SALE

New and used pipe and casing. Also used well drilling rigs. Tom's Well Driller Supplies, 1225 Lancaster Ave., Reading, Pa. Phone: SPruce 7-6331.

New water well casing, 3/16" or ¼" taper threads, free delivery N. J., N. Y., N. Eng. states. Morris County Pipe Co., Inc., Rt. 46, Pine Brook, N. J. Call collect: CApital 6-8343. All sizes, all weights.

Magnets, pull over 125 lbs., width 3¼", height 4-3/16", picks up carbide inserts. You can't afford to be without one, $20 ea. postage prepaid, satisfaction guaranteed. J. Bucci, 4001 Perkiomen Ave., Reading, Pa.

Write today for 130-page Free Cable Tool catalog, largest in the east. Let us quote exact items you need. Tri State Supply, Box 827, Parkersburg, W.Va.

500' pocket size water level indicator, complete, ready to use, with one extra spud. Price: $21 post paid. C. W. Lutts, 705 Plaza Serens, Ontario, Calif.

Comb. rotary well & coring drill, trailer augers $950.
2-ton Dodge '47 158" COE truck chassis new motor $495.
Mayhew 1000 air-mud rotary on '55 Ford 3-ton. We trade.
Bits, compressors, pumps, etc. Twin Pines, Geff, Ill.

Pipe and casing, black and galvanized, all sizes, low prices. Keystone Pipe & Supply Co., Butler, Pa., Phone: BUtler 7-3714.

Dodge 1959 T-700, 10-wheeler V8, 28,000 lb. bogie, 900 x 20 lug tires, full air brakes, 3-speed auxiliary, 16-ft. steel body, 1,000 gal. steel water tank, steel tool boxes & chain hoist mounted, equipped for well drilling, like new. 10,000 miles, asking $5,500. J. Henry Robbins — Gibbsboro, N.J. STerling 3-1610.

Bucyrus-Erie No. 12 electric bit dresser, less motor with furnace and blower, less fire bricks, 2 bit quenching racks and misc. dollies and dies for 6" bits, spare parts also included. Gill Bit Sharpening Co., Inc., P. O. Box 2375, Spartanburg, S. C.

WELL BUSINESS FOR SALE

A REALLY UNUSUAL OPPORTUNITY. Phila. Drilling Co., widely known reputable water well drilling & pump sales co., priced much less than actual value for quick sale, min. cash reqd. $5,500. 1 or 2 good cable rigs, all tools, equipt. & inventory. Rental of tool yard. Also, separately Keystone 50 rig on 40 mph I.H. half track specially rigged for fast set-ups & efficient operation, overhauled like new & painted orange, available with good tools & everything right down to forge equipt., jacks, blocking etc. All you need to get started is a pair of gloves. Terms available. Call A. Roth, Business Broker, Stroudsburg, Pa. HA 1-7591.

Drill and pump business in fast growing resort area in central Mo. 1955 model B-E 22-W rig, '59 model 20-W B-E rig, complete with tools, perfect condition, priced to sell, reason for selling: dissolved partnership. Scott Bros. Drill Co., Gravois Mills, Mo. FR 2-6854.

WELL BUSINESS FOR SALE

Well drilling business for sale in southeastern Penna., three drilling machines completely equipped with lines, tools and trucks and pickup truck and all fishing tools very reasonable, plenty of work to go with same, a home and shop included if desired. Write: The Driller, Box 805, South Milwaukee, Wis.

2 drill machines, complete with tools, mounted on trucks in good condition, ready to work: Bucyrus-Erie 20-W on 2-ton '48 Int., 2-speed axle, good rubber; one Keystone 5½ on '50 Chev. 2-ton truck, 2-speed axle, 5 complete sets of tools, 1948 Dodge 1-ton supply truck, 1955 Int. 2-ton truck, 1954 Chev. 2-ton truck.

1½-story frame dwelling on 1 acre of ground, work shop 26' x 32' complete with all tools. 1 18-ft. house trailer, plenty of contract work, complete price $12,000 cash. D. E. Tinsley, Agency, Corner of School & Center Sts., Bismarck, Mo.

PUBLIC AUCTION

Saturday, May 13, at 10:00 a.m. in Strasburg, Ohio, on U. S. Route 250, 29 miles southeast of Wooster, Ohio. Complete well drilling equipment, pumps, tools and parts including Bucyrus-Erie 20-W spudder on a 6x6 GMC truck. Bucyrus-Erie 22-W spudder on 6x6 Studebaker. Both in excellent condition. This is a very large sale of misc. well drilling equipment. For further information call or write Neil Robinson, Auctioneer, 80 W. Second St., Mansfield, Ohio, Phone LA 2-4182. Marion Harvey Co. owner, Phone 4291, Strasburg, Ohio.

HELP WANTED

Sales Engineer — municipal and industrial water wells and pump service, please contact McCarthy Well Co., Main Office, 670 Eustis Street, St. Paul 14, Minn.

Experienced, reliable cable tool driller for rock and screen work. Stewart Bros., Inc., P.O. Box 976, Schenectady, N.Y.

VALLEY STEEL PRODUCTS COMPANY

Louisiana, Missouri

NEW AND USED WATER WELL CASING

LINE PIPE

ALL SIZES
ALL WTS.

IRRIGATION PIPE

GALVANIZED
BLACK

OIL WELL CASING AND TUBING

FREE QUICK DELIVERY — YOUR YARD OR JOB SITE
WATCH FOR OUR TRUCKS — THEY DELIVER IN YOUR STATE

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Day Phone: SK 4-4545
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T. W. HARNESS
Day Phone: SK 4-4541
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CALL COLLECT • BUY DIRECT

Service 24 hrs. per day for ***365 days a year***

ECONOMICAL PRICES • QUICK DELIVERY • SATISFACTORY SERVICE
WATER WELL CASING AND PIPE OUR SPECIALTY

PROVEN BEST FOR EVERY WATER SYSTEM JOB!

■ Pump installers work faster, for less cost, and have less call-backs when they use either flexible Klearcor® or ABS semi-rigid pipe. Mirror-smooth interior surface cuts friction, requires less power and smaller pumps. Both are rust and rot proof, chemically resistant, and non-toxic. Complete conformance to all existing applicable standards. Always full wall thickness. With accurate ready-to-use fittings. Get Klearcor® in standard ½" through 2". Western Plastics Corporation also manufactures a complete line of ABS Semi-Rigid Plastic Pipe in standard ½" through 6" sizes.

KLEARCOR®
(Flexible)

® Registered, Patent Pending.

Approved:

WESTERN PLASTICS CORPORATION
1515 W. 2nd Street Phone 3-1361 Hastings, Nebraska

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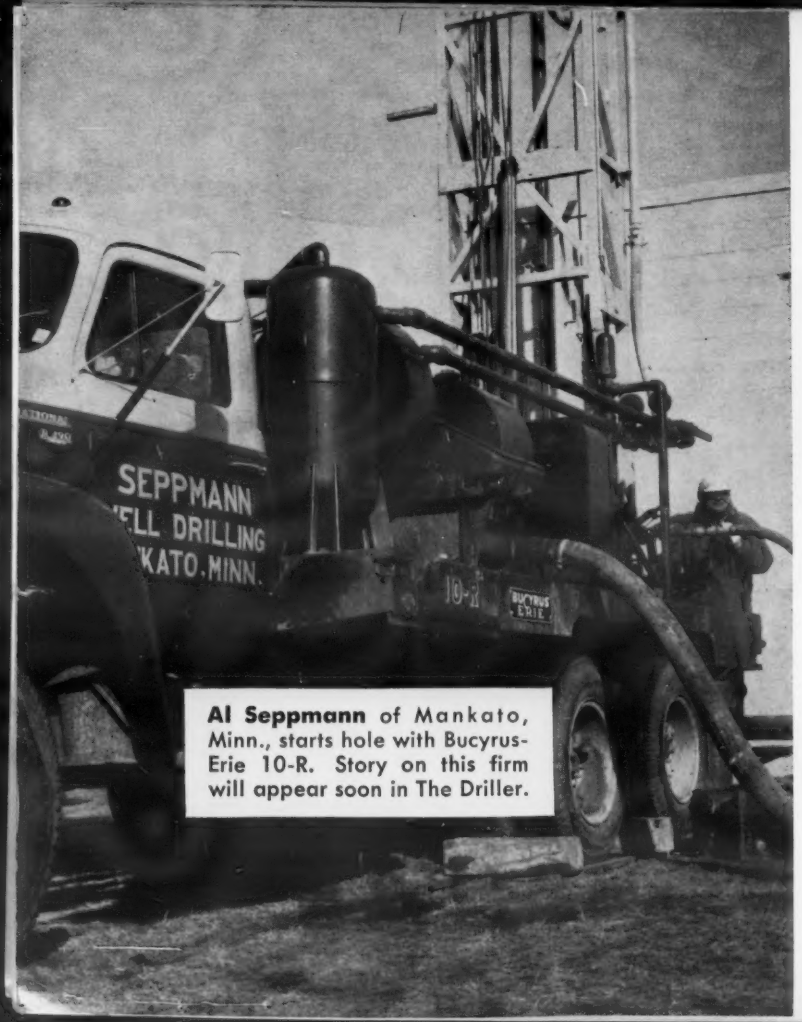

Al Seppmann of Mankato, Minn., starts hole with Bucyrus-Erie 10-R. Story on this firm will appear soon in The Driller.

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